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Ethical Enigmas in Modern Water Policy: The Albertan Example

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A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy

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Abstract:

This thesis examines the policy claim that Alberta's *Water for Life* strategy creates the possibility of a new water ethic in that province. The key problem for this dissertation is developing and defending a framework that would allow the Alberta case to be examined against like cases. In this context, the framework developed engages topics germane to many other locales, including issues of: (1) territory and the state, (2) the effects of classification systems on policy claims regarding water abundance, water scarcity and water security, and (3) the normative role of decision

Co-authorship Statement

All chapters of this dissertation are single authored except for Chapter 2, which was co-authored with Dan Shrubsole and has been accepted for publication (though no copyright yet transferred) at the journal *Environmental Values*. The first author on the accepted version of this paper is myself, Jeremy Schmidt. The chapter appears here verbatim.

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Nature is a complex system whose factors are dimly discerned by us.

—Alfred North Whitehead, *The Concept of Nature*

1

DISSERTATION OVERVIEW

1.1 Introduction

This dissertation is about water and ethics. It does not consider these topics *in toto*. Rather, it considers them from perspectives offered within geography and, in particular, several sub-fields—resource management, political geography, governance—that overlap with considerations of environmental philosophy regarding how norms affect human-environment relationships. It argues that water ethics are not only coeval with the norms affecting water use decisions in particular places but are also part of making up the space of the world. Explicating and defending that idea is the impetus for the dissertation. The catalyst, however, is an attempt to explain policy documents that claim to create the "possibility of a new water ethic" in Alberta, Canada (Alberta Water Council, 2007: 1).

The search for a new 'water ethic' in Alberta echoes expert calls regarding how the systematic failure to connect water policies to ethics has meant that material relations to water are often taken for granted, and many crises thereby created, even though water is fundamental to sustaining our life, our economies and our aesthetics (Postel, 1992; Feldman, 1995). And in this regard Alberta's particular water problems frame its efforts at creating new ethical possibilities. Its southern regions are semi-arid, yet dominated by irrigated agriculture and intensive livestock operations that account for the majority of licensed water uses (>70%) while creating problems of surface water pollution (Gannon et al., 2004; Byrne et al., 2006). Southern development was initially undertaken to secure Canadian sovereignty over the west (Mitchner, 1967), but Alberta's regional diversity

and changing socio-political context now challenges its model of water development and management (Percy, 1996). The rise of environmental concerns, for instance, confronts the political economy of a burgeoning fossil-fuel energy sector in the north and its detrimental consequences on aquatic ecosystems and the livelihoods, particularly those of indigenous First Nations, that depend upon them (Kelly et al., 2009, 2010; Phare, 2009). Examining the Alberta case, then, requires identifying the ethic already in place through a framework that links new ethical possibilities to the contexts that shape them.

1.2 Problem Statement

Explaining the Alberta case requires a framework for doing so. Ideally, such a framework will carry the possibility of comparing multiple cases. Since no such framework presently exists, the key problem for this dissertation is developing and defending one. Although not all places are of the same kind, the framework proposed to explain the Alberta case engages topics germane to many other locales, including issues of: (1) territory and the state, (2) the effects of classification systems on policy claims and rationale, and (3) the normative role of decision-making structures and processes governing water management and planning. In this sense, the framework developed provides for the possibility of examining the water ethics of places comparable to Alberta. In short: I aim to provide a framework through which to analyze the water ethic(s) of state jurisdictions. In so doing, the framework developed offers a way to understand how the material dimensions of water governance problems co-evolve with the values that legitimize water uses in particular places and which have a reciprocal or 'looping effects' on particular ways of making up the space of the world.

1.3 Chapter overview

The dissertation is structured as an introduction, four chapters, and a conclusion. Each chapter can be read as an individual manuscript that presents an element of the water ethics framework developed in this thesis. This chapter describes the framework developed, methods used, the key caveats of this research, and annotates each of the four chapters. Prefacing these remarks is background and introduction to themes that recur and cut across the dissertation, its interpretative claims, and its arguments.

1.4 Background: key themes

Three key themes are found throughout this dissertation: water, ethics and modernity. The first two themes, water and ethics, cannot be done without explicating how water norms are tied to place. The latter represents an orientation to understanding how places, like Alberta, are embedded in broader projects regarding how we make up the world. As developed below, referencing this project to 'modernity' offers an avenue for examining how the water norms existing prior to (and which may persist within) contemporary governance institutions are affected by the water ethics of state jurisdictions.

Water

This dissertation does not make essentialist claims about what water is, such as the notion that water is H_2O. Water is not, strictly speaking, H_2O. It is a combination of several related ions—H_2O, OH^-, H_3O, among less common others—that, when observed in particular contexts and functions have statistically significant outcomes, such as

boiling point, pH, and so on. Underpinning observations of macro-scale properties are different microstructures of which no particular configuration is the correct one (van Brakel, 2000). As Vandewall (2007: 910) argues, "[o]ur current best understanding of the electron transfers that give water the properties we observe is a statistical average of ever changing interactions so complex as to be quite literally unthinkable."

In the literature in human geography and water history, several authors argue the reduction of water to H_2O was part of a scientific program that supported both colonial practices and state water planning in a manner that eliminated competing understandings of water by first undermining alternate ontological frameworks and then de-legitimizing social and political relationships built upon them (Hamlin, 2000; Gregory, 2001; Linton, 2010). These critiques are frequently used to support a constructivist view of water. As Hacking (1999: 7) notes, constructivist views often work from the premise that X (i.e. what water is) is not inevitable, and that X could not have existed at all or existed otherwise. Hence, X is not determined by the nature of things but was rather "brought into existence or shaped by social events, forces, history, all of which could well have been different." Because social events are not neutral with respect to issues of power or justice, strong versions of constructivism suggest that our current way of knowing X (i.e. water) is unsatisfactory, even bad, and that we would should jettison or replace X.

This dissertation does not follow social constructivism. It rejects the inference that just because one version of water (i.e. H_2O) has come to dominate explanations of modern hydrology or water policy, that there are no facts of the matter. The constructivist

credo that "meaning precedes experience" is unsatisfactory when set alongside the lived experiences that shape and embody scientific, technological and semiotic claims (Parr, 2010: 12; see also Lakoff and Johnson, 1980). By contrast, this dissertation accepts non-essentialist facts about water, such as its existence as a contingent but determinable relationship of hydrogen and oxygen. On this view, our knowledge *that* water has the particular make-up that it does is the outcome of contingent scientific practices. But this does not entail that some actual combination of hydrogen and oxygen need not have existed. Which is to say, this dissertation begins with the existentialist credo that "existence precedes essence." Therein, denying the latter does not negate the former.

One question that arises when both constructivist and essentialist understandings of water are rejected is: *which* waters are being referred to when the term "water" is used? This problem arises because a multiplicity exists in what water is but not, it may be argued, when claims about waters are specified (i.e. the water in *this* glass has a particular micro-structure). Presented with this problem, this dissertation uses and, in moderate steps, seeks to develop what Hacking (1999; 2004a) has referred to as a dynamic nominalism. In this view, concepts are words in their sites. It is our understanding of those sites that is of interest because they provide for the conditions of what is possible in a given time and space. Hacking's (1999; 2004b; 2007) view is developed principally with respect to how we 'make up people,' and the way that classifications of people can 'loop back' and affect our classification system itself. This 'looping back' is evident in what Hacking (2004b) takes from Erving Goffman as a "total institution" where people are cut off from alternate ways of understanding themselves and begin to take on

characteristics of the classification system itself.[1] In this dissertation, I do not claim that people understand themselves differently because of how they classify water (although I do not preclude this possibility). Rather, I follow Orlove and Caton's (2010: 402, citing Mauss) argument that water is a 'total social fact' where, in classifying water,

> "…all kinds of institutions are given expression at one and the same time—religious, juridical, and moral, which relate both politics and the family; likewise economic ones, which suppose special forms of production and consumption, or rather, of performing total services and distribution."

The claim that water is a 'total social fact' presents a way to specify *which* water we are referring to by attending to how classifications of water 'loop back' to affect our observations of water in particular contexts and functions, such as in a particular institutional setting. These classification systems delimit the kinds of things used to make up our world. As such, they circumscribe the range of possible explanations of claims about any particular water(s). This phenomenon is not unique to water, and the ecological notion underlying Goffman's 'looping effects' can help us to develop a framework that recognizes how governing water according to the techniques made available by a particular classification will have reciprocal effects on what we choose to do at a later time (cf. Holling, 1996; Holling and Meffe, 1996). Because water pervades social and ecological systems, and is a limiting variable for many functions and processes, acting on any classification of water will affect multiple institutions at one and the same time.

From this perspective, the tremendous diversity of meanings associated with water cannot be parsed from the ways that particular classification systems order

[1] Such as may be the case, for instance, when individuals are classified as 'mentally ill,' then institutionalized, and subsequently adapt to a new self-understanding.

experiences with water in particular functions and contexts. These classification systems and the broader forms of life that exist along with them contribute to place-specific understandings and meanings of water across multiple institutions (i.e. Strang, 2004; Shaw and Francis, 2008; Whiteley et al., 2008; Chamberlain, 2008; Illich, 1986; Espelund, 1998; Boelens et al., 2010). The concrete expressions of these interactive effects can be seen, as Chapters 3 and 4 argue, in the co-evolution of policy propositions that link classifications of what water is to normative programs for its governance.

Ethics

Frankena (1973) argues the field of ethics provides outlines of normative theories that aid decisions about what ought to be done and seeks answers to meta-ethical questions, such as why we should be concerned with what ought to be done. This dissertation uses the term "ethics" and its cognates "morality" and "ethical" in non-foundational ways. That is, it does not seek to ground questions of ethics or meta-ethics in unassailable truths or authoritative claims. There will always be questions about what ought to be done and why particular decisions present as ethical in one instance and not in another. For instance, telling the truth may be an ethical issue in a court of law, but not in games where deception is allowed by the rules. When and how we follow rules of right conduct, or norms, and how those rules change is of key importance for this dissertation because following (or failing to follow) norms has direct consequences on the water available to others. For example, one 'rule' of good water governance may be to increase water use efficiency. But using water more efficiently in agricultural irrigation can reduce the amount of water returning to a shared watercourse and negatively affect others

downstream. Such cases can result in conflicts between individuals, communities (such as rural versus urban communities) or between states. In this sense, the water norms expressed in policy (i.e. increasing efficiency) are always deployed in particular contexts that shape how water norms fit with broader values and political goals (Tisdell, 2003).

When we deliberate on environmental policy norms and ethical obligations we do so in language (Norton, 2005). Wittgenstein (2001) argued that, when we follow the rules of a language game, things may turn out other than we had expected; we may be surprised. He argued that we are entangled in our own rules and that understanding this entanglement is part of answering (or eliminating) philosophical problems. In the context of making ethical claims, Williams (1985) has argued in parallel fashion that we should not expect to find a convergence of views based on 'the way things are.' To do so, he draws a distinction between ethical explanations and those of science.

> "In a scientific inquiry there should ideally be convergence on an answer, where the best explanation of the convergence involves the idea that the answer represents how things are; in the area of the ethical, at least at a high level of generality, there is no such coherent hope" (Williams, 1985: 136).

For Williams (1985), convergence regarding ethical claims may occur. Explaining that convergence, however, requires that we do not see ethical principles and action as standing in the same sort of relationship that premises have to conclusions (Williams, 1985). As Hoffmaster and Hooker (2009) argue, the model of 'applied ethics,' which supposes correct normative action is the outcome of reasoning from premise to conclusion, does not accurately reflect what moral agents do, or how contextual factors or heuristic devices affect decisions. This dissertation takes the position that, because we are

entangled with rules of language regarding what counts as an ethical question in a given place and time, we are also entangled in the social world (cf. Williams, 1985).[2]

Being entangled in the social world does not imply ethical relativism. As Hannah Arendt (1992) argues, we can defend the view that there is a kind of public, common sense—*sensus communis*—that evolves as we learn to make aesthetic judgments through participation with others. To develop the existentialist motif a step further, this allows us to follow Simone de Beauvoir's (1948) notion that *social* existence precedes essence. Arendt's (1992: 72) "community sense" underpins this dissertation's premise that the implicit (and in some cases tacit) judgments affecting water's classification are entangled with ethical norms. The thesis does not seek to escape this entanglement. Rather, it seeks to understand how the 'community sense' that inflects water norms has changed over time as norms co-evolve with classification systems.

Ethical entanglements with the 'social world' are understood in this dissertation as entanglements with how we classify water. That is, the categories through which we classify water are understood as shared judgments that reflect not only specifications of water in particular contexts and functions, but which also fit with and shape broader views of the social and physical world. For instance, Falkenmark and Folke (2002) have argued that the traditional classifications of water policy only capture water in its liquid phase—blue water—and fail to account for water its phase shift to water vapor in evapotranspiration by plants—green water. They argue that because green water is

[2] Parallel arguments exist for explaining science itself as entangled in the social world (i.e. Latour and Woolgar, 1986). But as this thesis progresses, and as the above section has already suggested, the view defended here is that scientific claims and ethical claims are not of the same ilk.

missing from water policy that water is not managed ethically, which they define elsewhere in terms of maximum human well-being (Falkenmark and Folke, 2010).

To deepen this line of thought, this thesis pays particular attention to how the 'space of the world' is conceptualized. It develops the argument that, following Einstein (1961), space and time should be understood as both relative and not independent of things. The question then, is what *kinds* of things? As Russell (2009) learned from Einstein, the challenge is to imagine a world of *events* and not of 'things' in 'motion.' This leads to two considerations. First, there are infinite spatial and temporal coordinate systems that could position observers with respect to events. Second, how events are parsed into 'things' (relata) and their relations depends on the systems of classification that, as Eddington (1929) described, are used in the project of 'world-building.' This thesis is not concerned, as were Russell or Eddington, about the physics of world-making. It is concerned with how the social world is made up in relation to the classification systems that determine what *kinds* of things are used to delineate events into relata and relations.

Nelson Goodman (1978) incisively argued that to understand 'world-making' we face a particular problem of induction: the categories that we use to explain events are themselves contingent, and so when we make explanatory inferences we cannot say whether we are making claims about the 'way things are' or about how our existing classification systems influence observations of events. This suggests a deep contingency regarding what constitutes 'the world' and has led to various responses. Bruner (1987),

for instance, argues that "life is narrative" just because we must find a way to prevent an infinite regress regarding our explanations of categories. That is, there must be some 'background story' that presents as a stopping rule for explanation. Alternately, Hacking (2004b) has suggested that the 'historical ontology' of particular concepts enables us to see how things become concrete possibilities *for us*, in a particular time and space. Hacking refers to changes in our possibilities as changes in our 'styles of reasoning.' His suggestions build on Foucault (1970; 1984), who brought attention to how discourse and power relations affect the possibilities of knowledge and explanations of events.

Feminist and ecofeminist ethicists have shown how the rules for foreclosing on alternate narratives do not come from nowhere. They have argued persuasively that power relations enable certain sets of categories to prevail over, and to oppress, others. Plumwood (1993) identifies how dualisms such as culture-nature, mind-body, or reason-emotion (amongst others) have shaped the creation and enforcement of particular categories in science and ethics based on claims about the standards of rationality. Warren (1990) identifies and rejects the 'logic of domination' that inscribes value claims into rationality by specifying relations amongst categories in hierarchical terms that accord higher value to, for instance, humans over nature. Plumwood's (2002) proposed alternative positions claims about what is rational within broader power structures that inflect systems of classification and which may be reworked in alternate accounts of rationality, such as those in ecology. Merchant (2004) has likewise argued that the narrative of complex systems ecology offers an opportunity to envision non-hierarchical relationships amongst the socio-ecological relationships and the categories used to orient

environmental policies to them (see also Wheeler, 2006). In the case of water, Gaard (2001) has shown how a dominant utilitarian narrative has created environmental injustices for Canada's First Nations through forms of development, such as dams, that rely on a hierarchical attitude wherein maximizing human well-being is accomplished through the total control of water and without regard for non-economic values.

In this context, this dissertation may be seen as providing a framework for identifying how existing water narratives and categories shaping notions of the world come to influence the water ethics of state jurisdictions. It suggests that state water ethics are, therefore, always entangled with narratives for making up the world. Importantly, however, it draws the distinction between being entangled and being entrapped. And, in so doing, works to provide leverage towards a new narrative that enables attendance to both categories and their relations in modernity. As such, developing a framework for analyzing the water ethics of state jurisdictions provides a mechanism for contesting the ways that certain classifications of water, or 'others' more generally, lead not only to particular kinds of water problems, but also affect issues of access to water and the political procedures that affect its governance. What is needed is an explicitly ethical discourse that connects definitions of water and water management units (i.e. watersheds) to acceptable governance arrangements. As the late ecologist James Kay (2000) showed, once we recognize that were are part of the complex social and ecological systems we seek to manage, we must also recognize that there is no value neutral place from which to narrate our relationship to those same systems. And this requires confronting modernist environmental policies that seek to 'regulate from nowhere' (Kysar, 2010).

Modernity

"Modernity" names a broad set of historical, political and philosophic processes in which humanity was de-centered from its position in an inherently meaningful cosmos. As Foucault (1984) describes it, the ethos of modernity is one where accounts of relations to things, each other, and the self, are freed from dependence on an authoritative source. In this sense, modernity is often viewed as a project of 'emancipation' from metaphysical and religious traditions. Latour (1993) and other theorists (i.e. Habermas, 1987; Taylor, 2007) have argued that modernity is marked by a new, secular understanding of time. In Latour's argument, this new time works along two dichotomies. The first is the purification of humans from non-humans through social and natural law, respectively. The second is the translation of 'hybrids' that traverse between the poles of society and nature. Translation is needed because our sorting of things into human vs. non-human categories is never a clean shot, and 'hybrids' proliferate when things fail to conform to either. In this sense, Latour argues that the sorting practices of purification and translation comprise modernity. As Latour (1993: 76, original emphasis) states, "*[i]t is the sorting that makes the times, not the times that makes the sorting.*"[3]

The 'sorting practices' of modernity were not and are not normatively neutral. Wallerstein (2004) has demonstrated how modernity was influenced by the dominant liberal politics and ethics of the 18th and 19th centuries. When coupled with modernity's 'decentering' aims, liberalism can be seen as seeking an account of the state, the economy and civil society that is free from an authoritative source. For instance,

[3] Latour (1993), as is well known, claims that we have never been modern because he thinks that only the task of purification has been recognized in the period claimed in explanations of "modernity."

Habermas (2008: 102) defines political liberalism as "…a non-religious, post-metaphysical justification of the normative foundations of constitutional democracies." But as Losurdo (2011) has shown, liberalism embroiled modernity in numerous contradictions and exclusions that created and carried uneven power relationships regarding *for whom* emancipation was sought.[4] This uneven internal context and modernity's expansion to non-European contexts has led to an appreciation that there were, and are, multiple modernities (Taylor, 2004; Eisenstadt, 2000). These variants cannot be surveyed here. Rather, two aspects evident in the literature on water governance are considered (from Taylor, 2007): (1) how the common institutions and practices that circumscribe public space (i.e. the state) change in modernity, (2) how participatory processes shift the locus for agreement away from inherent meanings and towards explanations that are not particular to any metaphysical position.

Public space

The theory of 'high modernism' is routinely offered as an explanation for how water law and management practices were reconfigured under the influence of the modern, liberal state (i.e. Swyngedouw, 1999; Molle *et al*., 2009; Bakker, 2010; Linton, 2010). Scott's (1998) idea of 'high modernism' uses a visual metaphor to assert that the state 'sees' water and other things (e.g. forests) through a bureaucratic and technocratic lens that denies alternate ways of knowing or governing social and ecological relationships as 'resources' become legible to the state. As Chapters 2 and 3 of this thesis explore, there are reasons to be hesitant about accepting 'high modernism.' And as

[4] For instance, many liberal theorists held that state abolishment of slavery constituted an intrusion into the domain of personal property and an infringement on liberty (Losurdo, 2011).

several other authors also suggest (see Reuss, 2008; Blatter and Ingram, 2001), I argue that the shift from 'pre-modern' to 'modern' water norms was not characterized by a sharp break, as is supposed by 'high modernism.' Rather, the era of state water management that characterizes the late 19th and 20th centuries was one where multiple meanings of water competed for political purchase, and where reconciling multiple perspectives was central to institutional viability (Ingram, 1973).

Other parts of the literature on geography and water have intersected with the state with respect to governance scales and jurisdictional boundaries (i.e. Norman and Bakker, 2009), law (Matthews, 1984) and the manner in which the political economy of the state affects transitions towards shared or de-centralized forms of water management under the influence of liberalism and its variants (Swyngedouw, 2005; Kaika, 2005). These intersections are helpfully framed by Agnew's (1994) 'territorial trap' that suggests we should not see the state as a 'container' of social or physical space but rather as a complex of social, economic and political interactions. In this regard, Chapter 3 of this dissertation develops a new account of territory in order to engage in the notion of public space without 'high modernism' or the 'territorial trap.'

Public processes

A second trend in water governance is the growing role of public participation in water management. Often characterized as a shift from 'government to governance' (see Durant *et al*., 2004), explaining public participation has required articulating both what participation is and the factors that enable or constrain it (Mitchell, 2002; Delli Priscoli,

2004; Sabatier *et al*., 2005). These considerations often implicate a broader theory that can explain how such transitions are possible, legitimate, and justified given the nature of state institutions. While this dissertation does not focus on the political theories that may explain these transitions, it does seek to understand concerns regarding water ethics within this larger political landscape.

Mouffe (2005: 10) has argued that the landscape of political liberalism closes avenues for "acknowledging the nature of collective identities" through an emphasis on individualist and rationalist explanations regarding how the state gains legitimacy from its constituency. For instance, Mouffe rejects Habermas' (1984a,b; 1996) arguments that the rules conditioning language enable us to conceive of political participation through a communicative rationality implied, *eo ipso*, in speech acts. On Habermas' account, discourse itself is the realm in which agreements over democratic participation are achieved because the rules necessary for communication are not particular to any metaphysical perspective.[5] But as thoughtful critiques have shown, this explanation creates power differentials in claiming that "participation" operates according to the terms of political liberalism. By contrast, Tully (2005; 2008) argues there is a 'strange multiplicity' within states due to the multiple forms of life in pluralistic societies.

Acknowledging the broader political landscape is critical for this study because, in both Alberta and elsewhere, water norms often predate the modern state. As such, the conversion or reinterpretation of existing socio-ecological systems under the tenets of

[5] Habermas is widely cited in environmental and water governance on the issues of how to understand both the 'public' and legitimate 'public participation' (i.e. Norton, 2005; Ellis, 2008; Bakker, 2010).

political liberalism may not always capture the political and ethical norms of long-standing water use traditions or hydrological systems (cf. West, 2007; Butler, 2000). As such, *existing* water norms and rights are not trans-historical, but the outcomes of legal, political and cultural traditions befitting different social meanings of water (see Espelund, 1998; Strang, 2004; Rodriguez, 2007). In this sense, the 'de-centering' ethos of modernity is in fact a 're-centering' of water norms around those processes that derive legitimacy from a particular political and normative understanding of society. Because of this, it is appropriate to consider where and how reconfigurations of existing water norms conflict with the aims of the liberal state (Tisdell, 2003).

1.5 A water ethics framework

As the themes of water, ethics and modernity intersect, the dissertation develops a framework for analyzing the water ethics of state jurisdictions. The objective of the framework is not attempt to prescribe an ethic, but rather to show how the water ethics of the modern state co-evolve in reference to existing, and often persisting norms affecting water. As I have argued elsewhere (Schmidt, 2010: 4), a water ethic can be defined as a "normative framework guiding actions that affect water." This thesis develops that definition by noting that, when multiple normative frameworks are in play, multiple water ethics may be at work in the same place and hence competing for different visions of social space.

The framework developed in this dissertation is not a neutral device. Rather, it is one that reveals how the modern water narrative has classified water in ways that support

the liberal state and subsequently reworked claims about how water should be governed according to the possibilities made available by this classification. This reworking is examined in three dimensions that provide a framework for analysis. The first is the establishment of a narrative for claims about public space. In this respect, Chapter 3 examines the relationship of water to the territory claimed by the liberal state in order to see how that relationship legitimates a certain narrative of public space over others. Complimentary to that narrative is the classification systems that it uses, which is the topic of the second aspect of the framework: the claimed de-centering of water norms from any unique (i.e. metaphysical) claims. As Chapter 4 suggests, the attempt to govern water on de-centered terms has required reclassifying it in terms congruent with the narrative of the liberal state: that is, as a resource. So classified, the task of solidifying water within this new narrative required propositions that could reconcile, and where necessary create, governance possibilities that fit with this classification of water. Third, and finally, once water was reordered under a new vision of public space it becomes possible to create new institutional structures that set out the rules of public processes. Chapter 5 considers how governance transitions were effected alongside arguments for a new 'water ethic' in Alberta. This concluding chapter returns to this argument.

1.6 Methods

The methods for this dissertation are presented here in terms of the appropriateness of the data used, the manner in which the analysis was conducted, and the fit of each to the methodological approach that supports the water ethics framework

developed. Alongside these considerations several of the limitations and judgments made regarding research design and data are provided, with broader caveats in the next section.

Data

The data used for this dissertation comes from four sources. The first two, secondary historical material and archival analysis, were gathered from the literature and the special collections on William Pearce held at the University of Alberta archives. Secondary historical material covered the evolution of Alberta's water laws, their relation to indigenous First Nations, governance controversies, and environmental history. As cited throughout this dissertation, these dimensions of the Albertan water context are critical to understanding the dominant water narrative in contemporary Alberta. Given the coverage of secondary sources, the archival research targeted the specific normative rationale given for Alberta's water laws from 1890-1894, which has not been covered in the literature, but which encompasses the period in which Alberta's first water laws were researched, drafted and passed. William Pearce, a key architect of Alberta's first water law, corresponded both nationally and internationally regarding which water doctrines ought to be used and to defend the social principles upon which they rested. As such, the archival work looked specifically at what normative arguments Pearce engaged with.

The third source of data was from public documents. These included the 1996 *Alberta Hansard* records of the Government of Alberta that document the legislative and committee debates during the introduction and passage of Alberta's *Water Act.* Another source of data was the public documentation surrounding the development and

implementation of Alberta's *Water for Life* strategy. This material covers the period from 2001-2008 and includes data from the initiation of the strategy, through to its adoption in 2003, and subsequent renewal after five years in 2008. The publicly available data used in this dissertation is not the source data of public participation exercises, which are held by a consulting firm and the Government of Alberta, neither of which responded to requests for it. As such, the decision was made to analyze the data that were made public. Due to this limitation, the dissertation does not comment on how information gathered from public participation processes informed policy. Rather, it focuses on how policy documents marshal public participation processes to support specific policy directions in the development of new water norms and governance institutions.

The focus on government publications has two other considerations of note. The first is that the data do not include alternate sources of policy commentary by non-governmental organizations or public surveys. This decision was made firstly because the dissertation aims to understand how the water ethics of state jurisdictions are *internalized* in policy and not how new ethics compare to other standards. The second implication of using government publications is that different ministries have different directives. In this study, material comes exclusively from the Ministry of Environment and organizations that fall within its ambit, such as Alberta's new water governance institutions. This decision also entails limits, because the policies in ministries of health, natural resources and industry (among others) all hold consequences for how water is governed. Nevertheless, because the Ministry of Environment is responsible for water, this dissertation is limited to how it develops water policies with respect to other ministries.

There is, in this respect, a "silo" approach to water governance in Alberta, with little obvious interaction between ministries evident. During the course of this project, the Ministry of Environment was renamed the Ministry of Environment and Water but the implications of this change, if any, are not explored.

The fourth source of data is from semi-structured interviews conducted by the author with a range of key informants. The questions that supplied themes for the one-hour interviews are supplied in Appendix I along with research ethics documentation (Appendix II). All interviews were given in a place chosen by the interviewee. A total of 46 invitation letters were sent, with 25 interviews conducted. Interviews were conducted at various times from September 2009 until February 2012. Interviews were conducted at two levels. The first is the Alberta Water Council, a 24-member multi-stakeholder board offering policy advice to the cabinet of the Alberta Government. The second is watershed planning and advisory councils (WPACs). There are eleven WPACs in Alberta as shown in Figure 1 below. Invitations and respondents were selected to cover all active sectors of the multi-stakeholder boards that comprise WPACs and the Alberta Water Council: industry, provincial government, WPAC staff, environmental NGOs, municipalities and members of the public at large. The only stakeholder board members for which multiple participants were not obtained were also those less active in WPAC and Alberta Water Council activities: First Nations and the federal government.

There are two limitations to the interview data. The first is that three WPACs did not respond to requests to participate. One of these was very recently formed (2010) in

the Peace River region: the Mighty Peace Watershed Alliance. The remaining two are the Lesser Slave Watershed Council and the Beaver River Watershed Alliance. Despite these limitations, the study was able to cover all major populated and industrial areas of the province and the resource intensive watershed of Alberta's north: the Athabasca. Furthermore, although the specific institutional histories of the WPACs not included in the study are absent, the interview data reached saturation on several common themes for all WPACs, including issues of decision making procedures and consensus-building in developing 'state of the basin' watershed reports.

A second limitation is the time frame for interviews (2.5 years). This period was required in order to interview governance practitioners at roughly the same period of WPAC development; the period in which each developed 'state of the basin' reports. Those reports are the first task of each WPAC. In some cases (typically in southern Alberta), existing networks became the local WPAC. As such, they were able to form and undertake 'state of the basin' reporting more quickly than those WPACs that did not have this institutional backdrop. In this respect, several interview participants requested they be given more time to gain experience as their WPAC evolved beyond the initiation phase and into 'state of the basin' reporting. During this period, however, Alberta's entire water governance program under *Water for Life* was evolving in response to different changes in funding and government leadership. In this respect an attempt was made to deal with the *Water for Life* framework as a 'living' policy project.

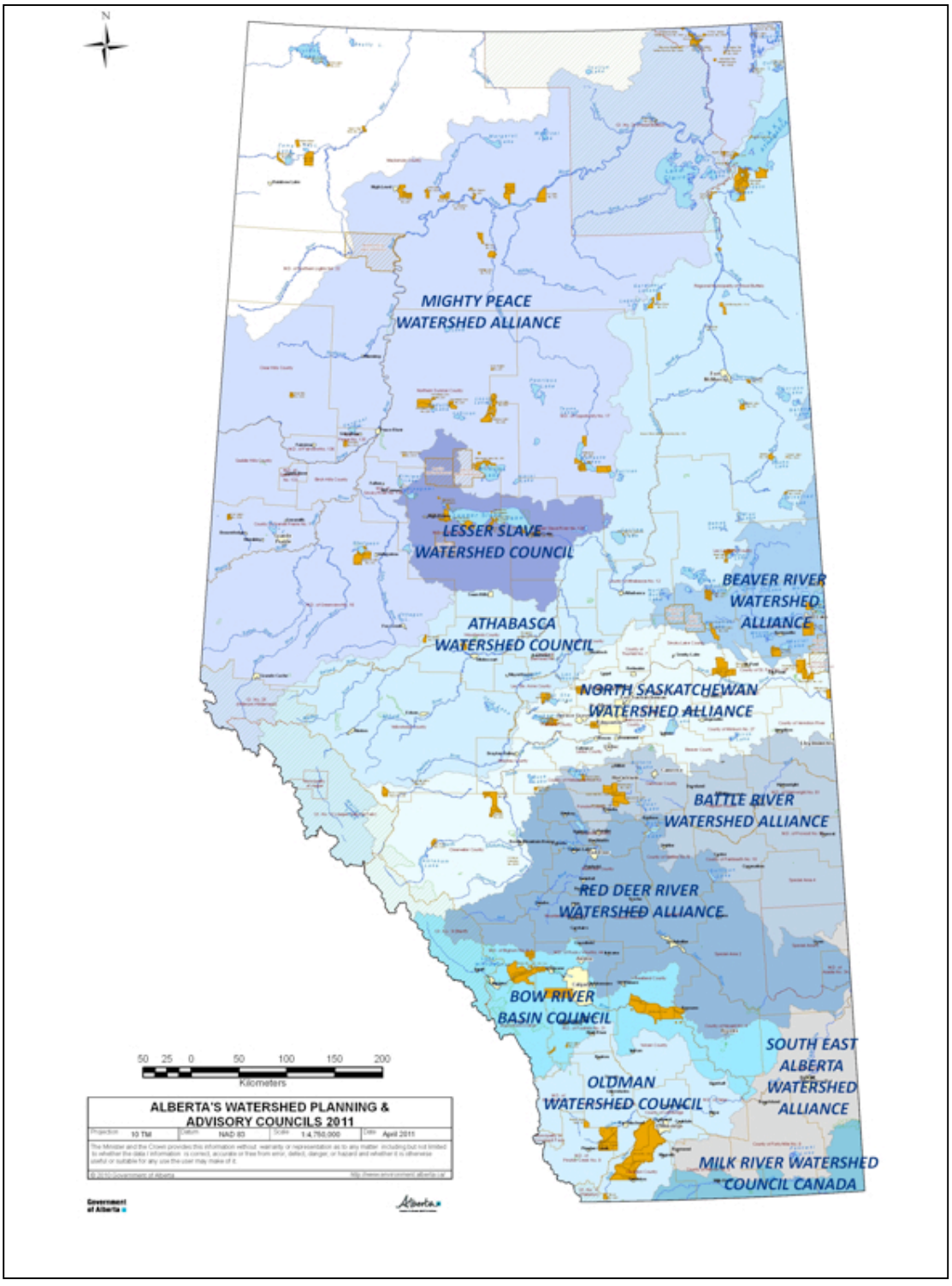

Figure 1: Map of Alberta's Watershed Planning and Advisory Council (WPACs) administrative boundaries (Web source: www.waterforlife.alberta.ca/images/wfl-P-WPACs-map.jpeg)

Methods and conceptual framework

As alluded to above, this dissertation is interested in the project of 'world-making' as a way to describe the water ethics of state jurisdiction without collapsing water to either side of the human-environment boundary. To accomplish this, it makes use of several methods that fit a broader methodology. This section describes the methods of data analysis and their fit with conceptual issues of methodology.

Secondary historical material was used to situate and critically assess whether the targeted archival data utilized in this study fit with broader interpretations of Alberta's historical context. As such, the archival analysis did not seek a historical explanation per se. Rather, it sought to understand, given accounts of Alberta's context in the late 19th century, what claims were made to give normative legitimacy to specific proposals for water governance. Such a perspective is warranted because to understand the claim that Alberta's *Water for Life* strategy creates the 'possibility for a new water ethic' it is important to have some semblance of what its *existing* ethic is, and the normative rationale that was given for earlier policies. Significantly, Alberta's water laws did not change substantively over the course of the 20th century, and as such this thesis does not document Alberta's water history as much as it compares different normative rationales for the water ethic of the state during periods when it originated and, now, is shifting.

Public policy documents were analyzed and coded using NVivo for a modified content analysis that allowed the author to essentially focus on key narratives. More specifically, the traditional method of content analysis was 'modified' insofar as the goal

was not to tabulate the occurrence of certain terms or phrases, but to seek an explanation of how the possibility of a new water ethic in Alberta may be understood, if at all, within the broader strokes of modernity. As such, the macro-categories for classification were drawn from theories of modernity shared by theorists Jürgen Habermas and Michel Foucault (see Flyvberg, 2001), who both suggest that relations to things, each other, and the self are the axes of understanding contemporary discursive frames. Habermas (1996) rationalizes these axes in a linguistic turn to claims about states of affairs, claims about correctly ordered social relationships and claims about personal experience. Accordingly, the coding of data used these three broad themes to make inferences regarding how Alberta's *Water for Life* strategy created the possibility of a new water ethic. Several sub-categories were generated for specific searches and to identify narrative elements.

Krippendorff (2004) has persuasively argued that the counts or frequencies of content analysis are best understood as summaries of the qualitative inferences used for classification. In this study, the content analysis was modified to allow for abductive inferences about the kinds of claim necessary to identify policy claims along three axes of modernity. And, further, to identify how the modern narrative promoted in Alberta's *Water for Life* strategy provided a stopping rule for explanations. In this sense, the important facet of the analysis is whether the possibility of a new ethic can be explained without reference to authority; that is, as an instance of water policy *within* modernity.

The modification of the content analysis means that the positioned judgments of the researcher are a pivotal part of the explanations offered in this dissertation. To engage

in this positionality (cf. Rose, 1997), the methodological approach to both the content analysis and interview interpretation (described below) forwards explanations as the outcome of abductive inferences. Abduction is a form of inference that helps explain the defeasible hypotheses we make from events (Gabbay and Woods, 2005). By beginning with events, abductive inferences seek to reason from the consequent to explanations of antecedent conditions (Burks, 1946).[6] Krippendorff (2004) argues that abductive inferences are appropriate for explaining content analysis because the contextual knowledge brought by the researcher to the data is part of the warrant for accepting conclusions. That is, out of the large range of potential interpretations of an event the actual hypotheses considered, and the smaller set discharged to explain the event, is not done systematically. Rather, a number of possible explanations are cut out very quickly in favor of those that will offer an inference to the best explanation.

John Law's (2004) work, *After Method*, suggests that because qualitative data involves non-systematic research judgments it is too 'messy' to be understood as descriptive work and should rather be understood as actively constructing not only 'the world' but, at that, only one of multiple possible 'worlds'. But as the above introduction to 'world-making' suggests, this dissertation does not follow social constructionism. Rather, its target is not a depiction of reality, but an account of how a particular depiction of reality was made possible. Similarly, content analysis holds an advantage over discourse analysis because it does not attempt to reduce reality to the language used to

[6] The logic of abduction was initially posited by Peirce (1956: 151) who suggested that the form of abductive inferences was: "A surprising fact C is observed. But if A were true, C would be a matter of course. Hence, there is reason to believe that A is true."

talk about it, such as when, for instance, Linton (2010) claims that the world water crisis is, at its core, a crisis of discourse about certain ways of knowing water. The realist impulse of this author is to say "not quite"—the water crisis does not reduce to discourse. It is tied to the actual thirst, disease and oppression of those without adequate water. *Explaining* the water crisis is wrapped in discourse, but the two are not synonymous.

The aim of world-making is not to reduce 'the world' to concepts (linguistic or otherwise) but to see that concepts are "words in their sites" (Hacking, 2004b: 17) and to then investigate how changes regarding those sites affect concrete possibilities of governance. As such, this dissertation does not make deductive or inductive inferences about events. Rather, the aim is to build hypotheses that explain how certain spaces of possibilities came to be in reference to the contingent ways in which we classify and order events. In this case, for instance, the possibilities of a new water ethic that came about under Alberta's *Water for Life* strategy. This, it is argued, can help us explain how public spaces, propositional claims, and participatory processes affect water ethics.

In this context, the analysis of interview data proceeded from verbatim transcripts. The aim of analysis was to understand the extent to which the hypotheses forwarded regarding Alberta's water ethic explains the governance space of practitioners. In this sense, the analysis looked at what the *Water for Life* strategy entailed for making modern water policy in Alberta operational without appealing to authority. Because the interview instrument was semi-structured, but also oriented around the *Water for Life* strategy, it provided a meaningful way to assess the relative influence of the strategy in operational

terms. As Chapter 5 details, the analysis considered the institutional history of Alberta's Water Council and specific WPACs against the water ethic identified through the content analysis. Chapter 5 therefore marks out how the water ethic internal to Alberta may be understood within the policy narrative articulated and only gestures towards how that ethic may be compared against those issuing from alternate normative sources.

Baxter and Eyles (1997) have argued that establishing rigour in qualitative research requires standardizing an evaluative approach to data in balance with recognition of the contingencies needed to capture the richness of social research. This approach to establishing rigour has been criticized by Bailey et al. (1999) for suggesting too sharp a divide between 'science' and 'creativity' (i.e. between reproducible standards and rhetorical frameworks for explanation). Bailey et al. (1999) offer 'grounded theory' as a way to develop rhetorical space alongside attempts to reflexively interpret data. This dissertation follows Baxter and Eyles (1997) insofar as it aspires to qualitative standards while recognizing that the types of inferences drawn from qualitative data fit an abductive account of how hypotheses are generated to explain observed events.

1.7 Caveats

Beyond the limitations of the data and methods noted above, this dissertation is constrained in several ways. First, it is structured as a series of manuscripts. As such there is a certain amount of repetition regarding some topics, such as Alberta's water history. An effort has been made to emphasize different dimensions of repeated information but, because part of the argument developed is that certain narrative rules preclude and

exclude others, the thesis does not offer a comparative analysis of all of the water ethics at work in Alberta. For instance, it focuses on the policy narrative articulated by the state and as such does not fully examine the counter narratives from First Nations or in terms of environmental history (for an overview see Schmidt, 2011). But it does not just ignore these considerations. Rather, as Chapter Three works to show, it offers an explanation of how these counter-narratives are oppressed. Second, this dissertation does not assess all of the ways that the state affects water norms. For instance, it does not consider issues of 'transboundary' water governance—cases where water systems transgress political boundaries. This is not because political boundaries are unimportant, such as when rivers are used as political boundaries or reclassified under different approaches to state planning (see Blomley, 2008; Blatter and Ingram, 2001). Rather, the focus of this work is to offer resources that explain the *internalization* of particular water norms alongside explanations of the kinds of places that state jurisdictions are.

Another limitation is the target of explanation: the Alberta case. The ambition of the thesis is to see the Alberta case as an example explained by the water ethics framework developed herein, but without comparative work it is not clear what dimensions of the framework will need revision or rejection. Where possible, the thesis engages in a broader contextualization of the Alberta case, but the place-specific nature of the Alberta context bears on the reach of the findings. In particular, the water doctrines developed to allocate water in Alberta are formed within a broader political economy—in the extractive cycles of capital accumulation (see generally Wallerstein, 2011). As Hessing et al. (2005) argue, that political economy has given rise to forms of governance

that are utilitarian, technically oriented and bureaucratically fortified against alternate visions of resource development and management. This dissertation does not emphasize political economy, but it lurks within the broader task the argument points towards, which is to reconnect politics with ethics and environmental justice with environmental philosophy in explanations of spatial difference (see also Harvey, 1996; Smith, 2000).

Alongside imperatives of political economy, Guha (2000) has shown how environmental norms are culturally informed. Such is certainly the case in Alberta, where cultural attitudes and norms have been shaped not only out of European conflicts with First Nations, but also through experiences with the environment. In particular, the dry-conditions prevailing in Alberta's southern regions have shaped water laws and regulations and the choices, amendments and exclusions that it has made regarding water doctrines prevailing in common law, riparian law, Hispanic traditions and First Nations water norms. Furthermore, cultural attitudes shape imagining of what a desirable human-environment relationship looks like, and even the notion of the 'environment' itself (Heise, 2008). As such, efforts to cultivate a new 'water ethic' address only the aspects of water norms recognized as problematic. As this study argues, however, that version is increasingly dominant as variants of liberalism intersect with water norms.

1.8 Thesis Overview

Chapter Two surveys the literature on water and ethics. It situates that literature in terms of the historical philosophy of early American water leaders John Wesley Powell and William James McGee, who were key figures in the classification of water as a

'resource' and the reordering of water in modernity. This historical contextualization is offered as a way to develop an alternate view of where and how water norms are reconfigured by the state alongside new ways of classifying water, particularly its categorization as a 'resource'. The chapter considers both the philosophical and legal approaches to the water ethics discourse and the implications of this discourse on the historically contextualized process of shifting to shared water governance.

Chapter Three examines the relationship of water and territory. It contributes to two current debates. The first stems from the work of Elden (2010a,b, 2011), who argues that territory is a historically situated concept that emerges in modernity alongside the secular state. The second stems from the work of Shah (2012), who argues that 'territory' is always *physicalized* through the reach and power of the state. In this context, it engages the work of Lefebrve (1991), who brought attention to the ways that social space is a lived experience. At one point, Lefebrve considers whether water may be a suitable metaphor for linking experience to social space because it underpins many of the ideas he sought to explain. But Lefebvre retreated from that suggestion, ultimately grounding his view in the metaphor of 'the soil.' This dissertation suggests that we can and should use water as a base metaphor for understanding social space. It considers what is to be gained from this perspective theoretically and in explaining the Alberta case.

Chapter Four continues the critical engagement with the social space in which water norms are inflected by the state. It examines how the classification of water as a 'resource' was supported by ethical, political and scientific claims that secured water

(and water rights) to an account of liberalism and the state. This account is then used to consider how the classification of water as a resource has had 'looping effects' for the field of water management and the propositions that are used to link human claims to hydrological systems. Three propositions are of particular importance: water abundance, water scarcity, and water security. These propositions can be traced to the classification of water as a resource and the 20th century trend to see local water problems as connected to the global water system. The chapter concludes with examples of how these propositions are at work within Albertan water policy.

Chapter Five looks at how Alberta's water policy discourse affects on-the-ground interactions of water managers and governance practitioners. It is based on both a modified content analysis of policy documents and semi-structured interviews with members of both regional watershed planning and advisory committees (WPACs) and Alberta's provincial Water Council. A third level, that of community-based stewardship groups, is not part of the analysis. The content analysis begins by considering how Alberta's new *Water for Life* strategy is developed in public discourse and then implemented and interpreted as creating the possibility of a new water ethic for the province. It identifies three key themes on which the new ethic rests: conservation (or wise use), sound science, and partnerships. The analysis of interviews considers how ideas of conservation, science and partnerships are made operational at the WPAC level and by the Alberta Water Council.

Together, these chapters offer an explanation and analysis of how the "possibility of a new water ethic" came about in Alberta while developing a framework for understanding the public space, propositions and processes contributing to the water ethics of state jurisdictions.

References

Agnew, J. (1994). The territorial trap: the geographical assumptions of international relations theory. *Review of International Political Economy*, *1*(1), 53-77.

Alberta Water Council (2007). Review of implementation progress of *Water for Life*, 2005-2006. Edmonton, Alberta. 34pp.

Arendt, H. (1982). *Lectures on Kant's political philosophy.* Chicago: The University of Chicago Press.

Bailey, C., White, C. & Pain, R. (1999). Evaluating qualitative research: dealing with the tension between 'science' and 'creativity'. *Area, 31*(2), 169-183.

Bakker, K. (2010). *Privatizing water: governance failure and the world's urban water crisis.* Ithaca: Cornell University Press.

Baxter, J. & Eyles, J. (1997). Evaluating qualitative research in social geography: establishing 'rigour' in interview analysis. *Transactions of the Institute of British Geographers*, *22*, 505-525.

Blatter, J., & Ingram, H. (Eds.). (2001). *Reflections on water: new approaches to transboundary conflict and cooperation.* Cambridge: Massachusetts Institute of Technology.

Blomley, N. (2008). Simplification is complicated: property, nature, and the rivers of law. *Environment and Planning A*, *40*, 1825-1842.

Boelens, R., Getches, D., & Guerva-Gill, A. (Eds.). (2010). *Out of the mainstream: water rights, politics and identity.* London: Earthscan.

Bruner, J. (2004). Life as narrative. *Social Research*, *71*, 691-710.

Burks, A. (1946). Peirce's theory of abduction. *Philosophy of Science*, *13*(4), 301-306.

Butler, L. (2000). The pathology of property norms: living with nature's boundaries. *Southern California Law Review*, *73*, 927-1016.

Byrne, J., Kienzle, S., Johnson, D., Duke, G., Gannon, V., Selinger, B. et al. (2006). Current and future water issues in the Oldman River Basin of Alberta, Canada. *Water, Science & Technology*, *53*(10), 327-334.

Chamberlain, G. (2008). *Troubled waters: religion, ethics, and the global water crisis.* Lanham, MD: Rowman and Littlefield Publishers, Inc.

de Beauvoir, S. (1948). *The ethics of ambiguity.* New York: The Citadel Press.

Durant, R. J., Fiorino, D. J., & O'Leary, R. (Eds.). (2004). *Environmental governance reconsidered: challenges, choices and opportunities.* Cambridge, Mass: The MIT Press.

Einstein, A. (1961). *Relativity: the special and the general theory* (R. Lawson, Trans.). New York: Three Rivers Press.
Eisenstadt, S. N. (2000). Multiple modernities. *Daedalus*, *129*, 1-29.
Elden, S. (2010a). Thinking territory historically. *Geopolitics*, *15*, 757-761.
Elden, S. (2010b). Thinking territory politically. *Political Geography*, *29*, 238-241.
Elden, S. (2011). Territory. In J. Agnew & J. Duncan (Eds.), *The Wiley-Blackwell companion to human geography* (pp. 260-270). Malden, MA: Blackwell Publishing Ltd.
Ellis, B. (2008). *Rationality and the environment.* London: Earthscan.
Espelund, W. N. (1998). *The struggle for water: politics, rationality, and identity in the American Southwest.* Chicago: University of Chicago Press.
Falkenmark, M. &Folke, C. (2002). The ethics of socio-ecohydrological catchment management: toward hydrosolidarity. *Hydrology and Earth System Sciences, 6*(1), 1-10.
Falkenmark, M., & Folke, C. (2010). Ecohydrosolidarity: a new ethics for stewardship of value-adding rainfall. In P. G. Brown & J. J. Schmidt (Eds.), *Water ethics: foundational readings for students and professionals* (pp. 247-264). Washington DC: Island Press.
Feldman, D. (1995). *Water resources management: in search of an environmental ethic.* Baltimore: John Hopkins University Press.
Flyvberg, B. (2001). *Making social science matter: why social inquiry fails and how it can succeed again*. (Cambridge: Cambridge University Press.
Foucault, M. (1970). *The order of things.* New York: Routledge.
Foucault, M. (1984). What is enlightenment? In P. Rainbow (Ed.), *The Foucault Reader* (pp. 32-50). Pantheon Books.
Frankena, W. (1973). *Ethics* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall, Inc.
Gaard, G. (2001). Women, water, energy: an ecofeminist approach. *Organization & Environment*, *14*(2), 157-172.
Gabbay, D., & Woods, J. (2005). *The reach of abduction: insight and trial.* Amsterdam: Elsevier.
Gannon, V., Graham, T., Read, S., Ziebe., K., Muckle, A., Mori, J. et al. (2004). Bacterial pathogens in rural water supplies in southern Alberta, Canada. *Journal of Toxicology and Environmental Health*, *67*, 111-135.
Goodman, N. (1978). *Ways of worldmaking.* Hassocks: Harvester Press.
Gregory, D. (2001). (Post) Colonialism and the production of nature. In N. Castree & B. Braun (Eds.), *Social nature: theory, practice and politics* (pp. 84-111). Malden, MA: Blackwell.
Guha, R. (2000). *Environmentalism: a global history*. Longman: New York.
Habermas, J. (1984a). *Lifeworld and system: a critique of functionalist reason* (T. McCarthy, Trans. II). Boson: Beacon Press.
Habermas, J. (1984b). *Reason and the rationalization of society* (T. McCarthy, Trans. I). Boston: Beacon Press.
Habermas, J. (1987). *The philosophical discourse of modernity* (F. Lawrence, Trans.). Cambridge, Mass: The MIT Press.
Habermas, J. (1996). *Between facts and norms: contributions to a discourse theory of law and democracy.* Cambridge, Mass.: MIT Press.

Habermas, J. (2008). *Between naturalism and religion.* Malden, MA: Polity Press.
Hacking, I. (1999). *The social construction of what?* Cambridge, Mass.: Harvard University Press.
Hacking, I. (2004a). Between Michel Foucault and Erving Goffman: between discourse in the abstract and face-to-face interaction. *Economy and Society*, *33*, 277-302.
Hacking, I. (2004b). *Historical ontology.* Cambridge, Mass.: Harvard University Press.
Hacking, I. (2007). Kinds of people: moving targets. *Proceedings of the British Academy, 151*, 285-318.
Hamlin, C. (2000). 'Waters' or 'water'? - master narratives in water history and their implications for contemporary water policy. *Water Policy*, *2*, 313-325.
Harvey, D. (1996). *Justice, nature and the geography of difference.* Oxford: Blackwell Publishers Ltd.
Heise, U. (2008). *Sense of place and sense of planet: the environmental imagination of the global*. New York: Oxford University Press.
Hessing, M. Howlett, M., & Summerville, T. (2005). *Canadian natural resources and environmental policy: political economy and public policy* (2nd Ed). Vancouver: UBC Press.
Hoffmaster, B., & Hooker, C. (2009). How experience confronts ethics. *Bioethics*, *23*(4), 214-225.
Holling, C. S. (1996). Surprise for science, resilience for ecosystems, and incentives for people. *Ecological Applications*, *6*(3), 733-735.
Holling, C. S., & Meffe, G. K. (1996). Command and control and the pathology of natural resource management. *Conservation Biology*, *10*(2), 328-337.
Illich, I. (1986). *H20 and the waters of forgetfulness.* London: Marion Boyars Publishers.
Ingram, H. (1973). The political economy of regional water institutions. *American Journal of Agricultural Economics*, *55*(1), 10-18.
Kaika, M. (2005). *City of flows: modernity, nature, and the city.* London: Routledge.
Kay, J. (2000). Ecosystems as self-organizing holarchic open systems: narratives and the second law of thermodynamics. In S. Jørgensen & F. Müller (Eds.), *Handbook of ecosystem theories and management* (pp. 135-160). Boca Raton, FL: Lewis Publishers.
Kelly, E., Short, J., Schindler, D., Hodson, P., Mingsheng, M., Kwan, A. et al. (2009). Oil sands development contributes polycyclic aromatic compounds to the Athabasca River and its tributaries. *Proceedings of the National Academy of Sciences*, *106*, 22346-22351.
Kelly, E., Schindler, D., Hodson, P., Short, J., Radmanovich, R., & Nielsen, C. (2010). Oil sands development contributes elements toxic at low concentrations to the Athabasca River and its tributaries. *Proceedings of the National Academy of Sciences*, *107*(37), 16178-16183.
Krippendorff, K. (2004). *Content analysis: an introduction to its methodology* (2nd ed.). London: Sage Publications.
Kysar, D. (2010). *Regulating from nowhere: environmental law and the search for objectivity.* New Haven: Yale University Press.
Lakoff, G., & Johnson, M. (1980). *Metaphors we live by.* Chicago: University of Chicago Press.

Latour, B. (1993). *We have never been modern* (C. Porter, Trans.). Cambridge, Mass.: Harvard University Press.
Latour, B., & Woolgar, S. (1986). *Laboratory life: the construction of scientific facts* (2nd ed.). Princeton: Princeton University Press.
Law, J. (2004). *After method: mess in social science research.* New York: Routledge.
Lefebvre, H. (1991). *The production of space* (D. Nicholson-Smith, Trans.). Cambridge, Mass.: Blackwell.
Linton, J. (2010). *What is water? The history of a modern abstraction.* Vancouver, BC: UBC Press.
Losurdo, D. (2011). *Liberalism: a counter-history.* New York: Verso.
Matthews, O. (1984). *Water resources, geography and law.* Washington DC: Association of American Geographers.
Merchant, C. (2004). *Reinventing Eden: the fate of nature in western culture.* New York: Routledge.
Mitchell, B. (2002). *Resource and environmental management* (2nd ed.). Essex: Pearson Education Limited.
Mitchner, A. (1967). William Pearce and federal government activity in the west, 1874-1904. *Canadian Public Administration*, *10*(2), 235-243.
Molle, F., Mollinga, P., & Wester, P. (2009). Hydraulic bureaucracies and the hydraulic mission: flows of water, flows of power. *Water Alternatives*, *2*(3), 328-349.
Mouffe, C. (2005). *On the political.* New York: Routledge.
Norman, E., & Bakker, K. (2009). Transgressing scales: water governance across the Canada-U.S. borderland. *Annals of the Association of American Geographers*, *99*(1), 99-117.
Norton, B. G. (2005). *Sustainability: a philosophy for adaptive ecosystem management.* Chicago: University of Chicago Press.
Orlove, B., & Caton, S. (2010). Water sustainability: anthropological approaches and prospects. *Annual Review of Anthropology*, *39*, 401-415.
Parr, J. (2010). *Sensing changes: technologies, environments, and the everyday, 1953-2003.* Vancouver: UBC Press.
Peirce, C.S. (1955). *Philosophical writings of Peirce.* Butcher, J. (Ed.) New York: Dover Publications, Inc.
Percy, D. (1996). Seventy-five years of Alberta water law: maturity, demise & rebirth. *Alberta Law Review*, *35*, 221-241.
Phare, M. S. (2009). *Denying the source: the crisis of First Nations water rights.* Surrey: Rocky Mountain Books.
Plumwood, V. (1993). *Feminism and the mastery of nature.* New York: Routledge.
Plumwood, V. (2002). *Environmental culture: the ecological crisis of rationality.* New York: Routledge.
Postel, S. (1992). *Last oasis: facing water scarcity.* New York: W.W. Norton & Co.
Priscoli, J. D. (2004). What is public participation in water resources management and why is it important? *Water International*, *29*(2), 221-227.
Reuss, M. (2008). Seeing like an engineer: water projects and the mediation of the incommensurable. *Technology and Culture*, *49*, 531-546.
Rodriguez, S. (2007). *Acequia: water sharing, sanctity, and place.* Sante Fe: School for Advanced Research Press.

Rose, G. (1997). Situating knowledges: positionality, reflexivities and other tactics. *Progress in Human Geography*, *21*, 305-320.

Russell, B. (2009). *The ABC of relativity.* New York: Routledge.

Sabatier, P. A., Focht, W., Lubell, M., Trachtenberg, Z., Vedlitz, A., & Matlock, M. (Eds.). (2005). *Swimming upstream: collaborative approaches to watershed management.* Cambridge, Mass.: The MIT Press.

Sartre, J.-P. (1984). *Being and nothingness* (H. E. Barnes, Trans.). New York: Washington Square Press.

Schmidt, J. J. (2011). *Alternative water futures in Alberta.* Edmonton: Parkland Institute.

Schmidt, J. J. (2010). Water ethics and water management. In P. G. Brown & J. J. Schmidt (Eds.), *Water ethics: foundational readings for students and professionals* (pp. 3-15). Washington DC: Island Press.

Scott, J. (1998). *Seeing like a state: how certain schemes to improve the human condition have failed.* New Haven: Yale University Press.

Shah, N. (2012). The territorial trap of the territorial trap: global transformation and the problem of the state's two territories. *International Political Sociology*, *2*(1), 57-76.

Shaw, S., & Francis, A. (Eds.). (2008). *Deep blue: critical reflections on nature, religion and water.* London: Equinox.

Smith, D. (2000). *Moral geographies: ethics in a world of difference.* Edinburgh: Edinburgh University Press.

Strang, V. (2004). *The meaning of water.* New York: Berg.

Swyngedouw, E. (1999). Modernity and hybridity: nature, *regeneracionismo*, and the production of the Spanish waterscape, 1890-1930. *Annals of the American Association of Geographers*, *89*(3), 443-465.

Swyngedouw, E. (2005). Dispossessing H20: the contested terrain of water privatization. *Capitalism, Nature, Socialism*, *16*, 1-18.

Taylor, C. (2004). *Modern social imaginaries.* Durham: Duke University Press.

Taylor, C. (2007). *A secular age.* Cambridge, Mass.: Belknap Press of Harvard University Press.

Tisdell, J. G. (2003). Equity and social justice in water doctrines. *Social Justice Research*, *16*(4), 401-416.

Tully, J. (1995). *Strange multiplicity: constitutionalism in an age of diversity.* Cambridge: Cambridge University Press.

Tully, J. (2008). *Public philosophy in a new key* (1-2). Cambridge: Cambridge University Press.

van Brakel, J. (2000). *Philosophy of chemistry: between the manifest and the scientific image.* Leuven: Leuven University Press.

Vandewall, H. (2007). Why water is not H2O, and other critiques of essentialist ontology from the philosophy of chemistry. *Philosophy of Science*, *74*, 906-919.

Wallerstein, I. (2004). *World-systems analysis: an introduction.* Durham: Duke University Press.

Wallerstein, I. (2011). *Historical capitalism*. New York: Verso.

West, C. A. (2007). For body, soul, or wealth: The distinction, evolution, and policy implications of a water ethic. *Stanford Environmental Law Journal*, *26*, 201-232.

Wheeler, W. (2006). *The whole creature: complexity, biosemiotics and the evolution of culture.* London: Lawrence & Wishart.

Whiteley, J. M., Ingram, H., & Perry, R. W. (Eds.). (2008). *Water, place & equity.* Cambridge, Mass.: The MIT Press.

Williams, B. (1985). *Ethics and the limits of philosophy.* Cambridge, Mass.: Harvard University Press.

Wittgenstein, L. (2001). *Philosophical Investigations* (G. E. M. Anscombe, Trans. 3 ed.). Malden, MA: Blackwell Publishing Ltd.

②

MODERN WATER ETHICS: IMPLICATIONS FOR SHARED GOVERNANCE

2.1 Introduction

Uncelebrated, and virtually unremarked upon, 2009 marked the centennial anniversary of W.J. McGee's (1909) declaration of the now ubiquitous notion that water is a 'resource'. Yet this idea of a 'water resource' is increasingly criticized as emblematic of how modernity eliminated water's social meaning in favor of a rationalized, secularized, materialist, and 'disenchanted' perspective (Hamlin, 2000). So understood, 'modern water' is mere H_20, a value-free category constructed through the science of hydrology and which legitimates claims to objectivity in water management despite the multiple social meanings still attached to it (Linton, 2010). This purported neutralization of water's place-specific properties has been identified by Bakker (2010: 217) as reflecting a modernist logic "...in which the rational, scientific management of resources is able to wreak technical miracles, but not without enacting a degree of ecological and cultural violence." This paper argues that water—*qua* resource—was not viewed in this way by some key members of American water leadership of the early 20th century and considers the ethical implications of recent trends towards shared water governance in this light.

The first argument of this paper identifies how historical norms of water governance were not neutral with respect to what water is. Using the American case, it provides historical evidence that describes the philosophical implications of recent trends

towards shared water governance through an examination of ideas espoused by some key water policy architects in the United States at the turn of the 20th century. The U.S. case is significant because it has often been uncritically promoted as the exemplar for educating international water managers (Briscoe, 2010). It therefore carries normative implications for the multiple modernities (cf. Eisenstadt, 2000) of global water governance. At this scale, the 'progress' (Kaika, 2005) and politics (Conca, 2005) of aligning local and regional water governance with global water institutions has frequently led to inequitable outcomes for non-western communities seeking to preserve their distinctive forms of life (Boelens et al., 2010).

The second argument of the paper takes up Nelson's (2003) remarks that water has often been in a 'metaphysical blindspot' for environmental ethicists. Here we deploy our review of the historical philosophy of water management to clarify different approaches to the emerging 'water ethics' discourse, and the normative concerns in contemporary shifts toward decentralized water governance (i.e. Sabatier et al., 2005). And whereas the literature connects material and conceptual contingencies to the uptake of particular values (Ioris, forthcoming), this paper focuses on how we might consider issues of water and ethics *without* the reputed nature/society distinction argued for in our historical account. With the arguments of both sections in mind, we conclude by considering several implications for decentralized water governance and the ways in which ethics are becoming an explicit part of the public-private-community partnerships that characterize transitions toward shared water governance.

2.2 Modernity revisited: a new view from American water leadership

Following Scott's (1998) arguments regarding 'high modernism,' a number of authors have argued that water development in the 19th and 20th centuries followed rationalist, bureaucratic, state-centered prescriptions for economic growth (i.e. Bakker, 2010; Molle, 2009). Often identified with a 'hydraulic mission', high modernism is intended to capture how the standardization of water for national programs increased supply through infrastructure investments (i.e. irrigation works, hydroelectric dams) and governed water through the 'objective' lens of the hydrologic sciences (Molle et al., 2009). Swyngedouw (1999) situates this mission within modernity by mobilizing Latour's (1993) ideas (among others) regarding the attempt to purify 'society' from 'nature'. These and like accounts, which suppose a nature/society dichotomy permeates modernity's state centered water programs (for an overview see Bakker, 2010), only partially capture water-use decisions in international contexts (see Blatter et al., 2001). Given the close connection between 'high modernism' and the nation-state it is therefore worth considering why this is so.

Modernity is often situated as a response to Enlightenment mind-body dualisms and the subsequent Kantian (2003) solution that gave a powerful new framework for understanding how the transcendental conditions of the knowing subject united reason with experience (i.e. Latour, 1993; Taylor, 2007; Habermas, 1987). As Heidegger (1961: 28) describes, this gave rise to "[t]hat period we call modern…defined by the fact that man becomes the center and measure of all beings. Man is the *subjectum*, that which lies

at the bottom of all beings, that is, in modern terms, at the bottom of all objectification and representation." With humans—usually men—at the center of a larger project for emancipating the subject from Enlightenment metaphysics, Gregory (2001) argues that water lost its plural ontological relations (i.e. healing waters, holy waters) through gradual expansion of positivist science and the mathematical equations of hydrology. The attraction of this view may reside in the positivist and pragmatist thinkers of the late 19th and early 20th century who followed Ernst Mach's (1886) neutral monism, which suggested that matter was neither mental nor material, but rather occupied a neutral position. This view was marshaled by William James (1904), Ludwig Wittgenstein (2001), Rudolf Carnap and eventually Bertrand Russell not only to avoid the mind-body problem but to eliminate the 'subject' as a mediator of the mind-body relationship under a general logic for science and psychology (cf. Banks, 2010). If early American water leadership had subscribed to neutral monism, or positivism more broadly, it would be plausible that the rendering of water as a 'resource' was congruent with broader divisions that separated humans from the 'neutral stuff' of nature (i.e. Zimmerman, 1933). However, this is not the case. And while versions of the former view are popular, an alternate can be developed in the context of the stated perspectives of some of the early American water management leadership at the turn of the 20th century. In fact, key water policy architects in the U.S., Major John Wesley Powell and W.J. McGee, promoted and in many ways instantiated a different model than that claimed in accounts of modernity. For Powell and McGee, the subject was inextricably bound up with water itself based on: (1) a version of communal evolution (now disproved), (2) the overcoming of environmental determinism via techno-science, and, (3) utilitarianism.

Communal evolution

When McGee declared water a 'resource' he was Secretary of the U.S. Inland Waterways Commission, a coalition of federal agencies tasked to coordinate national resource planning (the agencies were the: Bureau of Soils, Forest Service, Reclamation Service, Bureau of Corporations, and Army Corps of Engineers) (Westcoat, 2000). Officially the secretary, McGee was "the trusted and effective adviser in every branch of the Commission's work" (Pinchot, 1998: 359). In part, McGee was afforded this position through his tutelage under Major John Wesley Powell, his long-time friend and supervisor at the U.S. Geological Survey and the Bureau of Ethnology (Cross, 1953). Powell and McGee rejected the autonomous subject of the Enlightenment in favor of a 'collective unit' or communal subject (hereafter Subject) and explained differences in rationality among groups through deterministic beliefs about the effects of the environment on the capacities of human reasoning (McGee, 1899). For instance, both men repeatedly made homological arguments using the morphological characteristics of European civilizations (i.e. brain size) to establish superiority over 'savage' and 'barbarian' groups (Powell, 1888a; McGee, 1899; 1901).

While criticized by other anthropologists (i.e. Boas, 1913), Powell (1888b) and McGee (1899) considered western civilization as the zenith of evolution based on its successful adaptation to, and progressive control over, nature. Their view rejected social Darwinism (i.e. the view that competition among societies legitimated domination) but

retained communal interpretations of Darwinian evolution wherein superior control over nature was a sign of evolutionary progress. Such progress provided normative justification for pursuing courses of development that emerged out of the most advanced community's set of beliefs and practices. In this case, European versions of rationality, political models of organization (i.e. the state) and property ownership.

Although ignored in contemporary accounts (deBuys, 2004), Powell's (2009: 14) philosophy was laid out in *Truth and error; or the science of intellection*, where he argued that "every particle of matter has consciousness" and that as the complexity of organisms increased so did the emergent degrees of intellectual capacity. Powell's attempt to overcome the mind-body dualism was not well received philosophically (see Logan, 1899) but McGee (1894, 1897) likewise argued that the 'earth-stuff' is both physical and mental and that, in combination with natural selection, has led to intellectual capacity that increases in lockstep with complexity. Viewed in tandem with a communal view towards evolution, the most complex societies represented a higher level of evolutionary progress and, through science and technology, could improve upon the haphazard evolution of nature (McGee, 1901; Powell, 1888b). McGee (1894: 28) articulated the corresponding duty regarding the role of the Subject *as part of nature* as follows:

> "In a like manner, mankind, offspring of mother earth, cradled and nursed through helpless infancy by things earthly, has been brought well toward maturity, and like the individual man, he is repaying the debt unconsciously assumed at the birth of his kind by transforming the face of nature, by making all things better than they were before, by aiding the good and destroying the bad among animals and plants, and by protecting the aged earth from the ravages of time and failing strength, even as the child protects his fleshly mother."

Environmental determinism

Powell and McGee deployed their understanding of communal evolution as the basis for measuring social progress. Therein, the Subject controls and improves upon nature and thereby enables higher forms of reasoning as part of directing evolutionary progress. As McGee (1909: 37; emphasis added) wrote, "More than all else, the course of nature has come to be investigated *in order that* it may be re-distributed along lines contributing to human welfare." The tools for reordering nature in service to human welfare were scientific, technical and institutional. These tools manifested 'progress' by virtue of their utility in controlling nature for the ends of civilization and McGee (1911) believed that, ultimately, the project of conquering nature depended on a quantitative perspective that could accord all water resources to their highest value.

While control over nature freed the Subject from the determining limits of nature, securing water in the communal institutions of advanced societies stayed the course of human progress. Worster (2003) argues that Powell promoted 'watershed democracy' through direct citizen participation, an idea supported by Powell's (1899) contention that representational government subverted 'pure' democracy. However, Worster's (2003) view does not address the environmental determinism that underlay Powell's ethnocentric beliefs that western civilization provided the evolutionary model for community institutions (Powell, 1888a,b). In this respect, Powell argued public water ownership should be embedded in state constitutions (see also Worster, 2003) while McGee took the argument further by arguing that the community should be construed as the state itself.

This communitarian basis for water governance led McGee (1911: 822, original emphasis) to reinforce what he considered affirmed in American water law as the foundation of natural equity: "…the incontrovertible proposition—now become axiomatic—that *all the water belongs to all the people*." This proposition was basic for McGee because water was the predicate for all industrial and economic activity. This led him to search for ways to value water across all domains and, eventually, to utilitarianism.

Utilitarianism

In typical accounts of environmental ethics, Powell and McGee play bit parts (if any) in the debates between Gifford Pinchot's 'wise use' philosophy and John Muir's protectionism. Yet by Pinchot's (1998: 326) own account, it was McGee who convinced him of the need to extend utilitarianism from the "greatest good to the greatest number" to that "for the longest time." Further, Pinchot (1998: 359) states plainly that McGee was the "scientific brains of the early conservation movement." In both respects, McGee's conclusion was that the government should manage water (indeed all natural resources) since its permanence could vouchsafe long-term goods. As an exemplar, McGee accords well with Blackbourn's (2006) account of Germany's 'conquest of nature' wherein the symbolic meaning(s) associated with interventions in the waterscape were constitutive of modern social identities in the nation-state. To wit, McGee (1911: 817) wrote that,

> "As the prime necessary of life—the ultimate basis of existence for each of the individuals united in the nation—the water of the country is, under that leading principle of our national existence that all men are equally entitled to life, liberty and the pursuit of happiness, the common and indivisible possession of all—a

> possession in equity inalienable and indefeasible since no constituent of the nation could alienate or divest himself of his share without surrendering his right to life and so weakening the nation."

McGee did not shy from valuing water according to an aggregate state-as-community model, such as when he calculated the value of U.S. property by replacing the gold standard with the ten-year estimated rainfall needed for a renewable supply; "Reckoned in this way the value of the water reserve may be put at $150,000,000,000 in gross, *i.e.* 3$ per acre-foot" (McGee, 1911: 823). McGee's consolidation of economic and ethical values *within* physical water worked hand-in-hand with the scientific techniques that allowed water to be quantified. In this key respect, ethics and science did not eliminate water's multiple ontological orders; rather, it deployed water to account for all expressions of value. As such, McGee saw control over water as the Subject taking his [sic] proper place in nature. Interestingly, this led McGee (1911: 818) to enumerate the duties of governance in terms virtually synonymous with contemporary calls for subsidiarity,

> "…it follows that the inherently progressive development in the use of water attending the natural growth and orderly development of the people can best be fostered by combining individual and institutional agency in the highest practicable degree—*i.e.*, by effective cooperation among individuals and both business and civic organizations, including corporations, communities, municipalities, states and federal agencies."

The ethic of modernity

Why do the philosophies of Powell and McGee matter in a broader assessment of modernity and water? There are several reasons that show how the declaration of water as a 'resource' came bundled with a richer normative heritage than accounts working out of

the previously mentioned ‘high modernism’ (cf. Scott, 1998). To begin, it is worthwhile attending to the claim that declaring water a ‘resource’ was an instance of neutralizing water on the latter half of the society/nature distinction. As Powell and McGee demonstrate, water was not part of this sort of divorce but was seen as a having a special status as the basis for communities (i.e. states) and their evolutionary progress. Wolf (2008) has remarked similarly, but with respect to international water agreements, where standard frameworks for explaining state rationality premised on mind-body/society-nature distinctions fail to account for the ethical and spiritual bases upon which many cooperative exercises are premised.

Second, the actual influence of McGee’s utilitarianism in the U.S. water experience has been detailed historically (Feldman, 1995) and the close connection between McGee and Powell warrants consideration for how both men influenced the water ethic of modernity. Interestingly, the ‘hydraulic mission’ tends to not explain normative legitimacy of water governance—save to preserve bureaucracies of power—even though criticisms of water management focus on how its utilitarian basis is often directly tied to the model of resource development supporting the nation-state (Blatter and Ingram, 2001; Whiteley et al., 2008). As detailed by Feldman (1995; 2007), the value orientation of the state apparatus incorporated the full development of hydrologic potential for economic and social welfare under Conservation Era policies in the U.S. and, later, post-Keynesian political economy. And while this development path is often linked to those of other western nations like Spain (Swyngedouw, 1999) and Germany (Molle et al., 2009), the tension between western and non-western understandings of how

rights and obligations fit with communal institutions can be given historical form once situated within the broader historical philosophy of the U.S. experience. This allows for clearer connections of institutional norms to emerging trends in water governance (covered further below).

Finally, by situating the western, techno-scientific norms of modernity, we gain insight into ethical tensions that arise when western techniques of 'modernization' are applied in non-western contexts with different water governance norms, such as in Iran (Balali et al., 2009; Foltz, 2002). As such, whereas theories premised on a nature/society divide argue that water has carried multiple social meanings throughout modernity there exist deeper conflicts between the specific ethical, spiritual and communal meanings informing the notion that water is a 'resource' and its fit with alternate ways of ordering the world. Recognizing these conflicts helps to explain the recent turn in the literature on water governance towards 'water ethics' as a means to navigate both the outcomes of state-led interventions while seeking new forms of legal and moral legitimacy in recent trends towards shared governance.

2.3 Water ethics: why does a new view of modernity matter for water governance?

Water's declaration as a 'resource' was part of a broader social, scientific and normative philosophy. In application, this vision legitimated a management paradigm now identified as inadequate for, and indeed contributing to, contemporary water problems (Postel, 1992; Gleick, 2000). This recognition has motivated explicit

considerations of ethics alongside social, institutional and scientific issues in water governance (Brown and Schmidt 2010; Chamberlain, 2008; Whiteley et al., 2008; Postel and Richter, 2003). This section considers two normative sources—environmental philosophy and law—that have framed shifts away from state-oriented models of governing water and towards decentralized frameworks. The rationale for treating water ethics in these terms reflects how various sources of this literature are situated. For instance, Postel's (1992) seminal arguments for a new water ethic employs environmental philosophy by interning Leopoldian (1966) ideas that governance affects interdependent social and ecological communities. Alternately, legal scholars have argued that a water ethic is distinct from environmental ethics due to the long co-evolution of myths, legal mores and social customs affecting water and which encompass broader suite of concerns than just those of moral value (West, 2007). These perspectives are not mutually exclusive yet their emphases are worth treating distinctly in order to help clarify how each assembles other normative resources (i.e. economics) as part of water governance exercises.

Environmental philosophy

Philosophic arguments for a new water ethic often begin by identifying water as a constitutional need for individual lives and the ecological conditions upon which life depends and then connecting actions that have the potential to negatively affect individual lives, or the conditions upon which life projects are predicated, to their moral dimensions. In historical context, McGee's role in establishing utilitarianism in

Conservation Era policies has perhaps not received significant enough attention. However, Feldman's (1995) work has traced how his version of utilitarianism has subsequently affected U.S. water policy. Two strategies stand out. The first was a bureaucratic attempt to control water at regional or national scales. The second was an attempt to increase utility through market mechanisms. These dual strategies highlight a long-standing tension in international water governance between rational planning by government versus shifts towards privatization (Delli Priscoli, 1996). As with other critiques of state-led resource planning, economists rightly argue that governments often have not yet adequately prioritized efficiency, which has led to excessive water use and/or waste (Anderson and Leal, 2001). This view is often challenged by noting that if economic efficiency implies individual title, then private transactions are out of step with the communal foundation for many legal regimes governing water rights (Sax, 1994). Hence, individual versus collective strategies for increasing utility require careful articulation of different types of economic value (Hanemann, 2006) and a robust normative basis for decisions with complex regulatory regimes (Harremoës, 2002). This type of debate has a longstanding history, but it also begs two questions. First, what are society's values regarding water? Second, how does McGee's communitarian solution bear on this debate?

Social psychologists in Australia initiated a series of studies using value frameworks from environmental philosophy to ascertain values associated with water allocation, planning and fairness (Syme and Nancarrow, 1996). Their findings suggest individuals prioritize water values in the following order: the community's right to have a

say in allocation, natural rights for the environment, procedural fairness, situational criteria rather than general rules, an eschewal of using only economic values for water sharing, and a view of water allocation as needing to maximize community economic income and market freedom (Syme et al., 1999). As this list suggests, the attempt to integrate ethics and economics under a common metric has been difficult operationally (Syme et al., 2008). However, one difficulty with these studies is the presumption that ascertaining the level of agreement regarding ethical principles is symmetrical with how tradeoffs occur when values compete, or even conflict, in practice. As such, the attempt to find a common currency regarding water's value presumes a type of monism wherein values are seen as being comprised of, or otherwise reducible to, one type.

The attractiveness of a monist view is the supposition that once we have settled on the relevant value domain, we have the potential for reaching impartial decisions. Armstrong (2009) holds such a view when he assumes an intrinsic value as the basis for a water ethic. But there are at least three unattended difficulties with Armstrong's view. First, it is circular to stipulate an intrinsic value for water to *justify* an argument regarding what values inform a sound water ethic. Second, there may be elements of intrinsic value that people disagree on—such as how to determine what it as about water (i.e. its properties, functions or role in human flourishing) that supply the basis for intrinsic value (cf. O'Neill, 1992). Third, such an approach bears the burden of demonstrating how water's manifold symbolic, functional and sustaining roles in social-ecological systems are linked with the 'natural' categories of value articulated within a particular worldview (Berque, 2005). Such criticisms do not preclude an account of water's intrinsic value, but

they do suggest a difficulty with defining a water ethic without acknowledging the co-evolution of social institutions alongside changes in socio-hydrological systems (Delli Priscoli, 2000).

In some cases, attempts to deploy environmental philosophy in arguments for a new water ethic have conflated models of decision making with ethical deliberation. For instance, Canadian water practitioners attempted to reduce water problems to issues of applied ethics—wherein correct action may be deduced from general principles (Matthews et al., 2007). However, complex scenarios routinely exceed the capacity of the applied ethics model for guiding inferences from general principles to specific cases (Hoffmaster and Hooker, 2009). In practical terms, applied ethics is problematic in water governance because what is typically needed is not a model for applying principles, but a way to judge which principles to employ in particular circumstances. For instance, choosing to emphasize water's economic value may be appropriate in some cases, but it may need to be adjusted to fit with particular cultural or religious beliefs, such as in the case of many Islamic regions (Al-awar et al., 2006). Likewise, while we actively manage water uses and users at various points in the water cycle, we affect relationships across *all* aspects of socioeconomic and ecological systems (Falkenmark and Folke, 2010).

The difficulties of ascertaining, and then accounting for, society's water values has led to calls for value pluralism in water ethics. Interestingly, and although the historical connection to McGee is not made, the first UNESCO report (Selborne, 2000) on the ethics of freshwater proposes a solution to the public-private debate through a

communitarian ethic for balancing the traditional role of the state with the demands for equity in water management. However, McGee's (1911) solution was to interpret Oliver Wendell Holmes' judgment regarding the public nature of water in *Hudson Water Co. v. McCarter* (209 U.S. 349, 1908) in utilitarian terms, wherein individual rights within human communities, including state economics, are grounded in the fact that humans are physically and, *ipso facto*, politically, subject to water. In this light, the criticisms of environmental ethics for dealing with the emergent scales of water governance across jurisdictions and customs made in Delli Priscoli et al.'s (2004) introduction to UNESCO's 2004 *Water and* Ethics series prompts a reconsideration of the existing theory McGee offers to connect ethics and governance. This also bears on the first edited collection on water ethics and its organization around governance themes rather than environmental philosophy (Llamas et al., 2009). And while recent UNESCO work (Macer, 2011) attempts a more integrated view of environmental philosophy and water governance, what is of interest here is how the step away from an emphasis on determining moral value in favor of a broader normative orientation for a water ethic, such as that enabled by law, has occurred largely without considering the broader normative tradition instantiated by Powell and McGee or its effects on recent trends towards shared water governance.

Law

Legal approaches to a water ethic may include issues of moral value but may also include issues of custom, treaties or other rights to property or person. Thus, a legal basis

for a water ethic is distinct from arguments that extend moral norms to ground legal rights, such as in Postel's (2008) restated water ethic, which proceeds from Stone's (1974) arguments regarding legal standing for natural objects. In general, legal arguments for a new water ethic can be characterized in two ways that emphasize the positive (as opposed to strictly normative) role of law on water use practices. The first is *external* and reflects concerns that law has failed to keep pace with growing empirical knowledge of hydrological systems (Butler, 2000). The second is *internal* and focuses on the lack of legal mechanisms that ensures other rights—often couched in terms of human rights (Bluemel, 2004)—may be discharged given the current or future trends in water governance.

The external critique argues that legal doctrines are couched in larger narratives that may exclude relevant governance considerations. This, as Rose (1990) demonstrates, reveals a disparity between the theory of how decisions are made and the history of actual decisions. For instance, the common presumption is that regulations are necessary because water is scarce, either in terms of availability, economic production and/or externalities, or demand. As scarcity increases, policies are needed to resolve conflicts, with the correlate being that in times of plenty (most often in the past) resources were plentiful and policies unneeded. One would therefore expect the law to become more restrictive as scarcity intensifies. Yet historically this is often not the case. As Benedickson (2007) shows, water law has often been instrumentalized and discursively framed in favor of less restrictive policies as in, for instance, wastewater policies in Great Britain, the United States and Canada. In these jurisdictions, the doctrine of 'reasonable

use' replaced riparian norms regarding no perturbations to the 'natural flow' of water in a gradual retreat from standardized (even if only *prima facie*) restrictions to water use as scarcity problems were produced as externalities of wastewater policies.

Benedickson's examples are germane to broader concerns regarding how a focus on water ethics requires revisiting the ways in which water law seeks a fit with changing ecological and social conditions. For instance, critics have argued that there remains a need to establish an empirical baseline for determining relevance, such as how instrumental assumptions in legal precedent fit with the requirements of aquatic ecosystems (Klug, 2002). As Butler (1986; 2000) argues, rethinking the ethical precepts buttressing regulatory rules, such as those governing American property law, require principles congruent with an adequate empirical account of water's role as both a predicate for, and sustaining aspect of, ecosystems and society. Likewise, changing social values also require ethical reflection when historical rights are converted and reinterpreted under new institutional orders (Freyfogle, 1996). For instance, the prior appropriation system (first in time—first in right) in western North America placed water within the sphere of public ownership, with rights being granted for use and not as private property so as to prevent capitalists from speculatively accumulating water rights (Schorr, 2005). As such, the arguments of some economists that suggest prior appropriation was structured so as to increase efficiency and economic development (Anderson and Leal, 2001) need to be scrutinized for the fit of economic tools with broader social goals.

Apart from what the law excludes, a growing literature has also begun to examine the internal principles affecting legal decision making. From this perspective, which is often couched in terms of establishing a 'human right' to water, new governance norms require principles to ensure adequate water is available and accessible (Salman and McInerny-Lankford, 2004). These arguments often take a deontological point of view, where establishing a right implies a corresponding duty (usually for government) to adequately discharge legal obligations (Eckstein, 2010). However, there is no uniform mechanism for discharging such a right and, increasingly, various forms of water governance mix state-control, market mechanisms and public-private partnerships (Bakker, 2010). As such, legal redefinitions of water, or the formalization of customary claims in legal terms under new governance arrangements, are often criticized for 'dispossessing' groups of collective claims to water as part of neo-liberal governance programs, such as in Bolivia (Swyngedouw, 2005). In other cases, ecofeminists identify the historical, structural oppression of women, North American indigenous groups, or specific socio-economic classes (Gaard, 2001). In such cases, and to use research regarding women in South Asia as an example, the legal formalization of existing water use practices may work in the favor of the dominant groups due to broader social practices and habits that reduce the influence of women in decision making (Zwarteveen and Meinzen-Dick, 2001). As such, it is increasingly recognized that formal rights are embedded in broader and overlapping normative traditions upon which they depend for legitimacy and which also must be confronted in the articulation and formalization of water rights (Pradhan and Meinzen-Dick, 2003).

Water's special status, and the need for new institutional mechanisms in governance have led to some compromises between historical exigencies of the state-as-community and economic instruments. For instance, the European Union (2000: 1) established its Water Framework Directive for "Community action" by stating that, "Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such." This sort of economic acknowledgement, but restraint from full economic valuation, is furthered by Tisdell's (2003) comparison of different water allocation doctrines against political theories of justice, such as Nozick's libertarianism, Rawlsian fairness and Bentham's utilitarianism. Likewise, Chamberlain (2008) surveyed how a broader water *ethos* of social norms and values legitimates particular ethical orientations for law and religion across Islamic, Judeo-Christian, Hindu and indigenous perspectives. A central ethical concern here is therefore confronting how legal changes, such as redefining water as private or public property, may be partial to specific communities for political or cultural reasons that fail to ensure duties are adequately discharged across the collective community that previous laws or informal arrangements had recognized (Dellapena, 2008). In this regard, squaring both internal and external demands on the law depends on what *kinds* of persons or communities are recognized as rights holders and clarity regarding how rights classify different types of water and rights to them. It is here that a return to the considerations and resources of environmental philosophy can add clarity to the debate on water ethics and the shifts towards decentralized water governance.

2.4 Conclusion: towards an ethics of governance

The declaration of water as a 'resource' came replete with a governance philosophy that is not adequately captured by theoretical accounts premised on nature/society dualisms in modernity. The 'ethic of modernity' arose from attempts to order water according to a distinct teleological vision of social evolution as 'progress' and provided normative legitimacy for the extension of western ideas of the state-as-community, property, law and governance to many non-western contexts. As such, a reflexive response to modernity is not sufficient. Rather, a reflective, ethical response to the existing patterns of water governance is needed to reconfigure the basic categories through which water is understood in shared governance arrangements between groups with historical and contemporary views that order the world differently, such as those between western societies and aboriginals in the U.S. and Canada, with respect to both ethics (Reynolds, 2003) and law (Matsui, 2009). Here we conclude by arguing that the rise of approaches to water governance based on shared responsibility, devolving management structures and inter-agency coordination should be understood as a reflective exercise regarding the basic ordering categories affecting the contemporary shift from 'government to governance'. To broaden the views that identify this shift as "putative" (Norman and Bakker, 2009: 100), decentralized water governance may also be seen as normatively substantive because it must countenance less uniformity amongst, and increasingly encourage deliberation regarding, ethical values. Moreover, as the number of participants in water governance increases, ethical considerations are critical for assessing the respective roles of science, religion and law (Delli Priscoli, 2004). The

upshot is that shared governance efforts require attending to how moral and legal norms condition: (1) Action and the use of knowledge in general (Lenoble and Maesschalck, 2003) and; (2) The identification of who 'counts' and constitutes an affected party in natural resource management (Reed et al., 2009). We suggest three implications for how attending to our water ethic may support shared governance.

First, a central insight of the water ethics discourse is that we cannot avoid taking an ethical position in water governance. The preeminent utilitarian ethic inaugurated by McGee suggested that the consequences of water use actions are the measure of success for a certain type of community. Yet the current shifts toward 'community-based governance' are neither consequentialist nor oriented only towards the state, and anthropological work in this vein increasingly emphasizes the resonance regarding water's value across traditions that articulate these values through different social procedures in alternate rituals and customs (Shaw and Francis, 2008; Strang, 2004). Given the diversity of cultural communities supported by water, we should not expect any single 'water ethic' to be forthcoming. Rather, we should expect (and welcome) the multiplicity of views that forums for decentralized governance seek to support. Likewise, cultivating governance partnerships must work to find shared values that are not coincidental only with the relationships relevant to one set of political considerations, such as when 'watershed' governance is naturalized rather than viewed as part of larger social and political processes (Warner et al., 2008). Deploying existing networks for the purposes of effective governance, such as those of religious, civic and civil societies present one option for where coordinating values may be found regarding alternate

conceptions of the relationships and obligations amongst subjects, communities and water. While the focus here centered legal and moral sources regarding water ethics, there is no need to delimit normative resources to only these options for specific cases. We have done so here primarily as a way to engage accounts of modernity.

Second, the water ethics discourse explicitly recognizes that different governance constellations have the effect of legitimating certain normative positions while undermining others. In McGee the claim was explicit: control over nature is the warrant for legitimacy. In decentralized governance, however, the recognition and politics of informal partnerships—whether through mechanisms such as a watershed steering committee or "river-keeping groups"—needs to be complemented with an ethical basis robust enough to establish shared decision-making procedures, the vision that such arrangements aim to achieve, and a formal and informal institutional environment that can support it. A third, and closely related concern is with water management, which is typically defined in terms of actual decision making. Globally, there has been a strong push towards integrated water resources management (IWRM) as a strategy for meeting water demands in industrial and post-industrial societies. Unfortunately, integration has been premised primarily on coordination through rational, objective principles for water governance (see Jeffrey and Geary, 2006). Yet considering the ethical claims embedded in water policies, it is clear that there is no value-neutral domain that provides a tidy context for integration. In this regard, there is a need for continued objection to claims that cultural and political differences over water policy are primarily 'rational' and not part of broader value sets and orderings of the world (Espelund, 1998). Further, there is a

need to find frameworks that unite issues of ecosystem well-being with a view of both society and nature under a new narrative that recognizes their highly connected and complex interactions (i.e. Parkes et al., 2010). In this regard, the need for an integration of science, society and water remains pressing, and lessons may be learned from the philosophical efforts (though not necessarily the content) of early American water leaders.

This paper endeavored to show how values were an essential component of the views of the "water resource" of American water leadership at the turn of the 20th century rather than a value neutral base as often proposed in accounts of modernity and to attend to ethical issues affecting the contemporary shift to decentralized water governance. The growing 'water ethics' literature attempts to bridge these concerns and to order the overlapping spheres of normative legitimacy in water governance using different orientations from environmental philosophy and law. Regardless of approach, the shift towards decentralized governance raises anew questions of what kinds of subjects or communities make claims to water and what sorts of rights affect governance. As such, developing water ethics implies not only discontent with the norms inherited from policies past but an opportunity to recover aspects of our heritage that may provide leverage for improved governance procedures and outcomes. Such a view holds not only for the American case, but for anywhere that arresting and mitigating modern development paths is necessary for achieving equitable water governance.

References

Al-awar, F., Abdulrazzak, M. J., & Al-Weshah, R. (2006). Water ethics perspectives in the Arab Region. *Arab Gulf Journal of Scientific Research*, *24*(4), 167-182.

Anderson, T., & Leal, D. (2001). *Free market environmentalism* (Rev. ed.). New York: Palgrave.

Armstrong, A. (2009). Further ideas towards a water ethic. *Water Alternatives*, *2*(1), 138-147.

Bakker, K. (2010). *Privatizing water: governance failure and the world's urban water crisis.* Ithaca: Cornell University Press.

Balali, M. R., Keulartz, J., & Korthals, M. (2009). Reflexive water management in arid regions: the case of Iran. *Environmental Values*, *18*, 91-112.

Banks, E. (2010). Neutral monsim reconsidered. *Philosophical Psychology, 23*, 173-187.

Benidickson, J. (2007). *The culture of flushing: a social and legal history of sewage.* Vancouver: UBC Press.

Berque, A. (2005). A basis for environmental ethics. *Diogenes*, *52*, 3-11.

Blackbourn, D. (2006). *The conquest of nature: water, landscape, and the making of modern Germany*. New York: W.W. Norton & Company.

Blatter, J., Ingram, H., & Doughman, P. M. (2001). Emerging approaches to comprehend changing global contexts. In J. Blatter & H. Ingram (Eds.), *Reflections on water: new approaches to transboundary conflicts and cooperation* (pp. 3-30). Cambridge, Mass.: The MIT Press.

Blatter, J., & Ingram, H. (Eds.). (2001). *Reflections on water: new approaches to transboundary conflict and cooperation.* Cambridge: Massachusetts Institute of Technology.

Bluemel, E. (2004). The implications of formulating a human right to water. *Ecology Law Quarterly*, *31*, 957-1006.

Boas, F. (1913). *Speech*. Paper presented at the McGee memorial meeting of the Washington academy of the sciences held at the Carnegie Institution, Washington DC, Washington DC.

Boelens, R., Getches, D., & Guerva-Gill, A. (Eds.). (2010). *Out of the mainstream: water rights, politics and identity.* London: Earthscan.

Briscoe, J. (2010). Practice and teaching of American water management in a changing world. *Journal of Water Resources Planning and Management*, *July/August*, 409-411.

Brown, P. G., & Schmidt, J. J. (Eds.). (2010). *Water ethics: foundational readings for students and professionals.* Washington DC: Island Press.

Butler, L. (1986). Defining a water ethic through comprehensive reform: a suggested framework for analysis. *University of Illinois Law Review*, *439*, 439-480.

Butler, L. (2000). The pathology of property norms: living with nature's boundaries. *Southern California Law Review*, *73*, 927-1016.

Chamberlain, G. (2008). *Troubled waters: religion, ethics, and the global water crisis.* Lanham, MD: Rowman and Littlefield Publishers, Inc.

Conca, K. (2006). *Governing water: contentious transnational politics and global institution building*. Cambridge: MIT Press.

Cross, W. (1953). W.J. McGee and the idea of conservation. *Historian*, *15*, 148-162.

deBuys, W. (Ed.). (2004). *Seeing things whole: the essential John Wesley Powell.* Washington DC: Island Press.

Dellapena, J. W. (2008). A human right to water: an ethical position or a realizable goal? In L. Westra, K. Bosselmann, & R. Westra (Eds.), *Reconciling human existence with ecological integrity* (pp. 183-194). London: Earthscan.

Delli Priscoli, J. (1996). The development of transnational regimes for water resources management. In M. A. Abu-zeid & A. K. Biswas (Eds.), *River basin planning and management* (pp. 19-38). Calcutta: Oxford University Press.

Delli Priscoli, J. (2000). Water and civilization: using history to reframe water policy debates and to build a new ecological realism. *Water Policy*, *1*, 623-636.

Delli Priscoli, J. (2004). What is public participation in water resources management and why is it important? *Water International*, *29*(2), 221-227.

Delli Priscoli, J., Dooge, J., & Llamas, R. (2004). Water and ethics: overview. 32pp.

Eckstein, G. (2010). Water scarcity, conflict, and security in a climate change world: challenges and opportunities for international law and policy. *Wisconsin International Law Journal*, *27*(3), 410-461.

Eisenstadt, S. N. (2000). Multiple modernities. *Daedalus*, *129*, 1-29.

European Union (2000). Directive 2000/60/EC of the European Parliament and of the council of 23 October 2000 establishing a framework for community action in the field of water policy. *Official Journal of the European Communities, 327*, 1-72.

Espelund, W. N. (1998). *The struggle for water: politics, rationality, and identity in the American Southwest.* Chicago: University of Chicago Press.

Falkenmark, M., & Folke, C. (2010). Ecohydrosolidarity: a new ethics for stewardship of value-adding rainfall. In P. G. Brown & J. J. Schmidt (Eds.), *Water ethics: foundational readings for students and professionals* (pp. 247-264). Washington DC: Island Press.

Feldman, D. (1995). *Water resources management: in search of an environmental ethic.* Baltimore: John Hopkins University Press.

Feldman, D. (2007). *Water policy for sustainable development.* Baltimore: John Hopkins University Press.

Foltz, R. C. (2002). Iran's water crisis: cultural, political, and ethical dimensions. *Journal of Agriculture and Environmental Ethics*, *15*, 357-380.

Freyfogle, E. (1996). Water rights and the common wealth. *Environmental Law*, *26*, 27-51.

Gaard, G. (2001). Women, water, energy: an ecofeminist approach. *Organization & Environment*, *14*(2), 157-172.

Gleick, P. H. (1998). Water in crisis: paths to sustainable water use. *Ecological Applications*, *8*, 571-579.

Gleick, P. H. (2000). The changing water paradigm: a look at twenty-first century water resources development. *Water International*, *25*(1), 127-138.

Gregory, D. (2001). (Post) Colonialism and the production of nature. In N. Castree & B. Braun (Eds.), *Social nature: theory, practice and politics* (pp. 84-111). Malden, MA: Blackwell.

Habermas, J. (1987). *The philosophical discourse of modernity* (F. Lawrence, Trans.). Cambridge, Mass: The MIT Press.

Hamlin, C. (2000). 'Waters' or 'water'? - master narratives in water history and their implications for contemporary water policy. *Water Policy*, *2*, 313-325.

Hanemann, W. M. (2006). The economic conception of water. In P. P. Rogers, M. R. Llamas, & L. Martinez-Cortina (Eds.), *Water crisis: myth or reality?* (pp. 61-91). London: Taylor and Francis.

Harremoes, P. (2002). Water ethics - a substitute for over-regulation of a scarce resource. *Water Science & Technology*, *45*, 113-124.

Heidegger, M. (1961). *Nietzsche* (volume 4). San Francisco: Harper.

Hoffmaster, B., & Hooker, C. (2009). How experience confronts ethics. *Bioethics*, *23*(4), 214-225.

Ioris, A. (forthcoming). The positioned construction of water values: pluralism, positionality and praxis. *Environmental Values,* 1-27.

James, W. (1904). Does consciousness exist? *Journal of Philosophy, Psychology and Scientific Methods*, *1*(18), 477-491.

Jeffrey, P. & Geary, M. (2006). Integrated water resources management: lost on the road from ambition to realisation? *Water, Science & Technology, 53*, 1-8.

Kaika, M. (2005). *City of flows: modernity, nature, and the city.* London: Routledge.

Kant, I. (2003). *Critique of pure reason* (N. K. Smith, Trans. 2 ed.). New York: Palgrave Macmillan.

Klug, H. (2002). Straining the law: conflicting legal premises and the governance of aquatic resources. *Society and Natural Resources*, *15*, 693-707.

Latour, B. (1993). *We have never been modern* (C. Porter, Trans.). Cambridge, Mass.: Harvard University Press.

Lenoble, J., & Maesschalck, M. (2003). *Toward a theory of governance: the action of norms.* New York: Kluwer Law International.

Leopold, A. (1966). *A Sand County Almanac: with essays on conservation from Round River.* New York: Oxford University Press.

Linton, J. (2010). *What is water? The history of a modern abstraction.* Vancouver, BC: UBC Press.

Llamas, R., Martinez-Cortina, L., & Mukherji, A. (Eds.). (2009). *Water ethics: Marcelino Botin water forum 2007.* London: CRC Press.

Logan, J. D. (1899). untitled: [Review of Powell's "Truth and error; or the science of intellection"]. *The Philosophical Review*, *8*(3), 313-318.

Macer, D. (Ed.). (2011). *Water ethics and water resources management.* Bangkok: UNESCO.

Mach, E. (1886). *The analysis of sensations and the relation of the physical to the psychical* (C. M. Williams, Trans.). New York: Dover.

Matsui, K. (2009). *Native peoples and water rights: irrigation, dams and the law in Western Canada.* Montreal: McGill-Queens University Press.

Matthews, C., Gibson, R. B., & Mitchell, B. (2007). Rising waves, old charts, nervous passengers: navigating toward a new water ethic. In K. Bakker (Ed.), *Eau Canada: the future of Canada's water* (pp. 335-358). Vancouver: UBC Press.

McGee, W. J. (1894). *The earth the home of man.* Paper presented at the Special Papers: Anthropological Society of Washington, Washington, DC.

McGee, W. J. (1897). The science of humanity. *Science*, *6*(142), 413-433.
McGee, W. J. (1899). The trend of human progress. *American Anthropologist*, *1*(3), 1-26.
McGee, W. J. (1901). Man's place in nature. *American Anthropologist*, *3*(1), 1-13.
McGee, W. J. (1909). Water as a resource. *Annals of the American Academy of Political and Social Science*, *33*, 521-534.
McGee, W. J. (1911). Principles of water-power development. *Science*, *34*(885), 813-825.
Molle, F. (2009). River-basin planning and management: the social life of a concept. *Geoforum*, *40*, 484-494.
Molle, F., Mollinga, P., & Wester, P. (2009). Hydraulic bureaucracies and the hydraulic mission: flows of water, flows of power. *Water Alternatives*, *2*(3), 328-349.
Nelson, M. P. (2003). Earth, air, water, ethics. *Transactions: Scholarly Journal of the Wisconsin Academy of Sciences, Arts and Letters*, *90*, 164-173.
Norman, E., & Bakker, K. (2009). Transgressing scales: water governance across the Canada-U.S. borderland. *Annals of the Association of American Geographers*, *99*(1), 99-117.
O'Neill, J. (1992). The varieties of intrinsic value. *The Monist*, *75,* 119-38.
Parkes, M., Morrsion, K. Bunch, M., Hallström, L., Neudoerffer, R. Venema, J. & Waltner-Toews, D. (2010). Towards integrated governance for water, health and social-ecological systems: the watershed prism. *Global Environmental Change, 20*, 693-704.
Pinchot, G. (1998). *Breaking new ground.* Washington, DC: Island Press.
Postel, S. (1992). *Last oasis: facing water scarcity.* New York: W.W. Norton & Company.
Postel, S., & Richter, B. (2003). *Rivers for life: managing water for people and nature.* Washington DC: Island Press.
Postel, S. (2008). 'The missing piece: a water ethic.' *The American Prospect.* May
[online] URL:

http://www.prospect.org/cs/articles?article=the_missing_piece_a_water_ethic

Powell, J. (1888a). From barbarism to civilization. *American Anthropologist*, *1*, 97-123.
Powell, J. (1888b). The course of human progress. *Science*, *11*, 220-222.
Powell, J. (1899). Sociology, or the science of institutions. *American Anthropologist*, *1*(4), 695-745.
Powell, J. W. (2009). *Truth and error; or, The science of intellection.* Chicago: The Open Court Publishing Company.
Pradhan, R., & Meinzen-Dick, R. (2003). Which rights are right? Water rights, culture, and underlying values. *Water Nepal*, *9/19*(1/2), 37-61.
Reed, M. S., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J. et al. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management*, *90*, 1933-1949.
Reynolds, G. (2003). A Native American water ethic. *Transactions: Scholarly Journal of the Wisconsin Academy of Sciences, Arts and Letters*, *90*, 143-161.
Rose, C. M. (1990). Energy and efficiency in the realignment of common-law water rights. *Journal of Legal Studies*, *19*, 261-296.

Sabatier, P. A., Focht, W., Lubell, M., Trachtenberg, Z., Vedlitz, A., & Matlock, M. (Eds.). (2005). *Swimming upstream: collaborative approaches to watershed management.* Cambridge, Mass.: The MIT Press.

Salman, M. A. S., & McInerny-Lankford, S. (2004). *Human right to water: legal and policy dimensions.* Washington DC: World Bank Publications.

Sax, J. L. (1994). Understanding transfers: community rights and the privatization of water. *West-Northwest Journal of Environmental Law and Policy*, *1*, 13-16.

Schorr, D. (2005). Appropriation as agrarianism: distributive justice in the creation of property rights. *Ecology Law Quarterly*, *32*(1), 3-71.

Scott, J. (1998). *Seeing like a state: how certain schemes to improve the human condition have failed.* New Haven: Yale University Press.

Selborne, [Lord]. (2000). The ethics of freshwater: a survey. Paris: UNESCO,

Shaw, S., & Francis, A. (Eds.). (2008). *Deep blue: critical reflections on nature, religion and water.* London: Equinox.

Stone, C. (1974). *Should trees have standing? Towards legal rights for natural objects.* New York: Avon.

Strang, V. (2004). *The meaning of water.* New York: Berg.

Swyngedouw, E. (1999). Modernity and hybridity: nature, *regeneracionismo*, and the production of the Spanish waterscape, 1890-1930. *Annals of the American Association of Geographers*, *89*(3), 443-465.

Swyngedouw, E. (2005). Dispossessing H20: the contested terrain of water privatization. *Capitalism, Nature, Socialism*, *16*, 1-18.

Syme, G., & Nancarrow, B. (1996). Planning attitudes, lay philosophies and water allocation: a preliminary analysis and research agenda. *Water Resources Research*, *32*(6), 1843-1850.

Syme, G., Nancarrow, B., & McCreddin, J. (1999). Defining the components of fairness in the allocation of water to environmental and human uses. *Journal of Environmental Management*, *57*, 51-70.

Syme, G., Porter, N., Goeft, U., & Kington, E. (2008). Integrating social well being into assessments of water policy: meeting the challenge for decision makers. *Water Policy*, *10*, 323-343.

Taylor, C. (2007). *A secular age.* Cambridge, Mass.: Belknap Press of Harvard University Press.

Tisdell, J. G. (2003). Equity and social justice in water doctrines. *Social Justice Research*, *16*(4), 401-416.

Warner, J., Wester, P., & Boldin, A. (2008). Going with the flow: river basins as the natural units for water management? *Water Policy*, *10*, 121-138.

West, C. A. (2007). For body, soul, or wealth: The distinction, evolution, and policy implications of a water ethic. *Stanford Environmental Law Journal*, *26*, 201-232.

Westcoat, J. L. (2000). "Watersheds" in regional planning. In R. Fishman (Ed.), *The American planning tradition: culture and policy* (pp. 147-172). Washington DC: Wilson Center Press Books.

Whiteley, J. M., Ingram, H., & Perry, R. W. (Eds.). (2008). *Water, place & equity.* Cambridge, Mass.: The MIT Press.

Wittgenstein, L. (2001). *Tractatus Logico-Philosophicus* (D. F. Pears & B. F. McGuinness, Trans.). New York: Routledge.

Wolf, A. T. (2008). Healing the Enlightenment rift: rationality, spirituality and shared waters. *Journal of International Affairs*, *61*(2), 51-73.

Worster, D. (2003). Watershed democracy: recovering the lost vision of John Wesley Powell. *Journal of Land Resources & Environmental Law*, *23*, 57-66.

Zimmerman, E. (1933). *World resources and industries: a functional appraisal of the availability of agricultural and industrial materials*. New York: Harper & Brothers.

Zwarteveen, M., & Meinzen-Dick, R. (2001). Gender and property rights in the commons: examples of water rights in South Asia. *Agriculture and Human Values*, *18*, 11-25.

③

MAKING-UP TERRITORY

> "Put differently, it is necessary to understand how territory's legitimating power is extended and entrenched as it becomes *physicalized*, to uncover how the dominant but limited physical sense of territory is actually an important constitutive norm." – Shah (2012: 11, original emphasis)

3.1 Introduction

Shah's (2012) evocation to understand how territory becomes *physicalized* is an outcome of defining two dimensions of the so-called territorial trap. The first is that originally identified and subsequently reworked by Agnew (1994, 2009) in which the contingency of the modern state is reified as the basic unit of spatial and political analysis. The second is the concatenation of the very concept of territory and the emergence of the modern state itself. That is, to think 'territory' just is to depend on, and to also produce, a kind of physical substratum underpinning the state. Shah's arguments are part of a renewed interest in dividing intellectual labor between understanding the practices of territory, or territoriality, and as Gottman (1975) argued, the treatment of territory as a concept. Elden's (2005, 2010a,b,c, 2011) work shows how understanding territory as a concept requires a historical sensibility regarding how it is brought forth alongside not only the state and changing techniques for calculating and ordering political and jurisdictional space, but also as reconfiguring space in calculable terms. Territory, then, is not "merely a political way of conceiving land, but the political corollary of this emergent concept of space" (Elden, 2005: 8).

This paper suggests that territory is not a concept, if by concept we mean that representing "territory" under alternative conceptual frameworks leads to different views of 'the world.' That view underpins a dominant strand of thought that follows from Hegel to Marx and is evident in Lefebrvre's (1991) arguments regarding the social production of space. Following Rorty (1972), I will argue that the notion that 'alternate conceptual frameworks' leads to different worlds is one we would do well to lose. But if we reject the idea of territory as a representational concept yet, as am I, are unwilling to see it just as the aggregate of spatial practices—the outcome of territoriality (i.e. Sack, 1985; Delaney, 2010)—then what is territory?

This paper argues that the *physicalization* of 'territory' can be thought through what, from Lakoff and Johnson (1980a,b), may be called a base metaphor. In this sense, territory is not a conceptual representation of a world, but an exercise of making up the world through our concrete bodily experiences, in this case with land and power over it. Building from the well-established premise that space does not *exist* objectively or independent of things (Einstein, 1961), I argue that if we wish to discuss 'things' we need some account of how we classify our bodily interactions with them. But there is no fixed way to do this, such as 'natural kinds' that reveal the order of things (Hacking, 1991, 2007). So when systems of classification change then we are working with different kinds of things, and hence different kinds of space. By parity of reasoning, this enables us to also have different *kinds* of territory by virtue of our different systems of classifying our concrete experiences with land and power.

Section two introduces the idea of a 'base metaphor.' Section three considers how we can understand the base metaphors of territory—land and power—in reference to the world without making it the case that alternate conceptual frameworks lead to different worlds. To do so, I offer a critique of Henri Lefebvre's notion of the 'production of space' by drawing on both Foucault and the idea of a base metaphor. Section four considers how we can build an account of territory from the perspective of world-making and, in particular, the insights that Ian Hacking provides in this regard. Section five offers a case example of how we can have multiple *kinds* of territory that throw into relief different ways of classifying land based on different concrete experiences with it. It uses conflicts over water rights in Alberta, Canada to show how this works out.

3.2 The base metaphors of territory

Lakoff and Johnson (1980a,b) argue that metaphor—experiencing something in terms of another—is not only a linguistic phenomenon, but also part of what grounds our conceptual systems. Even with regard to space, Lakoff and Johnson (1980b: 476) show that our understandings are not given in the abstract, but that, "…the structure of our spatial concepts emerges from our constant spatial experience, that is, our interaction with our physical environment." The spatial concept of UP, for instance, "…is *not* understood purely in its own terms, but emerges from the collection of constantly performed motor functions that have to do with our erect position relative to the gravitational field we live in."[7] Thought of in this sense, spatial concepts are not that which we cannot think without—that we must intuit in a Kantian sense—but are rather

[7] As a thought experiment Lakoff and Johnson (1980b: 476) write: "Imagine a spherical being living outside of any gravitational field, with no knowledge or imagination of any other kind of experience. What could UP possibly mean to such a being?"

thought through physical experience. Of course, they are not thought only through physical experiences (returned to below) but the point here is that they are not thought without them. Lakoff and Johnson (1984a) argue further that, "the most fundamental values in a culture will be coherent with the metaphoric structure of the most fundamental concepts in the culture." This metaphorical structure of fundamental concepts I refer to here as a 'base metaphor,' and follow Allan (1996: 13) in thinking of such metaphors as the "concrete model that is inherent in the conceptualization of the 'abstract' idea."

If there is a concrete model inherent in the conceptualization of territory it is land (*terra*). Territory is routinely conceived via this base metaphor when we speak of homelands, national soils, or of people being rooted or grounded in place (Malkki, 1992; Elden, 2010). It is also well established that territory is not only related to land, but also etymologically linked to *terrere* (to frighten) and social power (Delaney, 2005; Elden, 2011a). Understood in this twofold sense, our physical experience with land and power form what Shah (2012) called territory's *physicalization*. This can be seen if we set out the ideas of *terra* and *terrere* against an alternate set of base metaphors regarding the kind of thing land is. For instance, Allan (1993) has reflected broadly on the very different notions of value, political leadership and virtue found in Confucian thought wherein water is a base metaphor. There, the idea of political order is not determined by power over others. Rather, order exists through taking a lower position towards others in the same way that the lowest river captures and directs the most water. By contrast, the Eurocentric experience with territory was not formed by interactions with water, even though water was a constituent part of building many national identities (Blackbourn, 2006). This is revealed in the long-standing instrumentalization of water to land within

the modern state (a point returned to below) and is also encapsulated in the ideas of 'territorial waters' and 'in*land* waters' that derive jurisdiction over water from spatial claims to land; such as is evidenced through the through histories of water and power that begin with the legal arguments of Justinian, continued through British Imperialism, the distance covered by canon shots fired seaward and, ultimately, to modern measurements (Colombos, 1923; Fenn, 1925, 1926; Fraser, 1925; Mesterson, 1928).

When territory's base metaphors are examined, it is evident that the notions of political order and power that emerge through them are not only contingent, they are also not adequately explained as being represented to us through conceptual frameworks that link our experience to an *a priori* notion of political space. They are, rather, a normative link through which particular experiences circumscribe how events and routines are actually lived. In the end, Shah (2012) does not believe that we can escape the 'trap within the trap' because *physicalizations* of 'territory' always and only appear through the admixtures of *terra* and *terrere*. But there is a difference between being entrapped and being entangled. And it seems more accurate to say that while we may be entangled with the 'territorial traps,' and the particular ways that land and power are understood, that we are not entrapped with them. First, it is necessary to raise my objection to a representational view of territory more carefully.

3.3 Territory and the space of 'the world'

To distinguish my use of territory from that which was suggested too narrow above requires exposition. My criticisms are directed towards a tradition that sees territory primarily in terms of representation. This tradition takes its leave from the Kantian notion that *noumena* provide sense data which the mind of a subject synthesizes through *a priori* concepts and intuitive preconditions—space/time—to represent *phenomena,* or the external 'world'. For Kant (2003), space and time are objective, yet unexperienced in themselves (as *noumena*). According to Elden (2009), Kant leaves open the possibility of examining space itself; thus drawing a distinction between its objective status and the way in which it is represented. And since Hegel it has been noted that if we see *a priori* concepts as contingent, then we could have different 'worlds' if we deploy 'alternate conceptual frameworks' (Rorty, 1972). Spatially, this tradition weaves its variant in historical materialism via Marx to Lefebvre (1991: p. 256), who argues not in the abstract, but for the idea that changes to the landscape can turn "…the space which preceded it, the space of the 'world', on its head."

One of the reasons that it is hard to see how the 'world' is represented is that since Einstein (1961), it has been evident that there are an infinite number of spaces always in motion with respect to each other. It was Einstein's view that requiring the concept of space to exist objectively or independent of things belonged to pre-scientific thought. This, as Russell (2009: 140) argued, was because, "[t]he world which the theory of relativity presents to our imagination is not so much a world of 'things' in 'motion' as a world of events." In this sense, there is no unique or fixed position accorded to a subject with respect to representations of the world. In the linguistic turn in philosophy, we get a more radical view where the 'world' is not comprised of 'things' at all. It is rather made

up of elementary facts—atomistic propositions whose truth-value could be determined by science. In the early Wittgenstein's view (2001a), "[t]here is no such thing as the subject that thinks or entertains ideas." Rather, the 'world' is constrained by the logical combination of atomic facts that could be determined by science. For Wittgenstein, *these* facts were all we could speak meaningfully about and, hence, the limits of the logical combinations of language were the limits of 'the world.' So, for instance, the sentence 'The dog wags his tail' does not represent a thing—the happy dog—but a linguistic rendering of *the fact that* the dog's tail wags. Although Russell (1929) labored against competing ideas that would see the 'subject' again placed uniquely in a 'world'—such as is found in the works of Henri Bergson—not everybody was taken with the story of logical empiricists about the limits of subjectivity being determined in a formalist logic of language. Nevertheless, the elimination of a uniquely positioned subject was accomplished and it is increasingly recognized that we are positioned observers in a 'world' of events (see also Massey, 1999).

One reason for not following the logical empiricists was that there is a difference between rejecting the Kantian subject and the claim that no version of subjectivity is workable. For instance, early pragmatists such as William James (1904) and C.S. Peirce (1955) also rejected metaphysical notions of a subject, but thought that we could offer an account of the 'world' by seeing linguistic claims as part of a shared and public process of experientially testing truth claims. In any case, without *a priori* concepts of space we need an account that is not objective or independent of things and which is not premised

on the unique metaphysical endowments of the subject. For this task, both Habermas and Foucault suggest ways to engage the limits of subjectivity without the Kantian subject.

Habermas considers space pluralistic. He reads Kant as seeking to secure a foundation for knowledge that does not appeal to authority but is 'emancipated' from metaphysical dogma (Habermas, 2008). The task of a critical philosophy then, is to establish the limits of knowledge in post-metaphysical terms. Yet Habermas does not follow Kant's program for suggesting that such limits are determined by subjective representations. Rather, he follows the linguistic turn in philosophy regarding how language represents facts. He deploys the pragmatist ideas of Peirce to argue that facts are true by virtue of whether inter-subjective tests—our taking 'yes' or 'no' positions regarding the claims of others—find agreement regarding an independent reality (Habermas, 1984a,b, 1996). It is his view that social space is generated out of communicative acts themselves (Habermas, 1996: 360). Moreover, the construction and preservation of political and moral orders actually "…*exist* through the recognition of normative validity claims" (Habermas, 1996: 17, original emphasis). So, if for Kant space was objective, yet unexperienced, in Habermas space is the outcome of linguistic communities following the rules that structure non-coerced agreements. Because Habermas also recognizes that linguistic communities are pluralistic, public space—the arena of inter-subjective testing—is of necessity also a plurality because there is no basis outside of the community itself for limiting what counts, in this case, as space itself.

In contrast to Habermas, Foucault does not think that any discursive domain is neutral with respect to competing claims. But like Habermas, he also considers Kant to have started down an emancipatory road, the implications of which are worth pursuing further. In Foucault's (1984) view, the limits of subjectivity are neither transcendentally tied to a subject (as in Kant) nor to an inter-subjective ideal (as in Habermas) because Foucault does not wish to define the limits of subjectivity as freedom *from* metaphysical claims or those of social power. Rather, he seeks to investigate the positive ways in which we "recognize ourselves as subjects of what we are doing." This view does not see the transcendental subject, or the inter-subjective truth-seeker, as reliable placeholders for explaining how particular social or political orders come about. Rather, Foucault (1970) considers the practices, measurements and disciplines affecting the subject as discourses through which power is positively exercised. As is drawn out below, Foucault's (1984) view of the subject actually turns us "…away from all projects that claim to be global or radical" by considering how the undefined work of freedom requires us to "constitute ourselves" in reference to knowledge, power, and ethics. The point here, however, is to offer the complementary view to Habermas' take on Kant because, together, he and Foucault suggest two powerful reasons for *not* considering 'the world' to be represented in a Kantian fashion where alternate conceptual frameworks lead to different 'worlds.'

If we take on a non-representational view of space, recalling that the *physicalization* of space as it informs territory is the aim of analysis, then the work of Henri Lefebrve stands most clearly in the path of finding alternate *kinds* of territory through which we might exit the so-called territorial trap(s). Most salient here, it is worth

emphasizing, is that Lefebvre has a very similar agenda. And, in many ways, very nearly accomplishes a similar aim. Ultimately, however, Lefebvre's account of territory requires it to comport with a representational view of space and of the 'world.'

Although he does not directly theorize territory, Lefebvre's view is that territory is linked to the control, habitation, and exploitation of soil (including the resources below) and the abstract ways that modes of production attempt to make such territory appear homogenous (see Brenner and Elden, 2009). On this view, the state is a unitary field that violently directs and maintains its own sovereignty under modes of production and accumulation that will support it (Lefebvre, 1991: especially at 278-282). This view is part of Lefebvre's broader outworking of how space is produced via three moments. In the first, the things towards which human labor is directed are not distinguished between their form and content and thereby retain secular and sacred meanings. In the second, societies enter the 'historical plane' of accumulation based on a detachment of things from their intrinsic endowments through production, exchange and abstraction. In the third, the lived outcomes of certain modes of production lead to contradictions and, subsequently, to dialectical attempts to reunite form and content. Lefebvre's (1991) three moments require differentiating the indispensable and durable 'material' from the *materiel* tools used in particular moments. For example, the social space of music relies on durable 'material' of harmonic tones and the *materiel* relations among the parts of instruments that produce them.

Lefebvre's (1991: 87) material/*materiel* distinction enables him to conceive of space as a unified whole that is neither a "thing among other things, nor a product among other products" but rather a superimposed and interpenetrating set of relationships. Social

spaces are not 'things' with limiting boundaries. And this insight leads Lefebvre to search for metaphors that can characterize how non-homogenous spaces exist without fixed boundaries of containment (i.e. walls, fences, city gates). This disposition toward unfixed spaces leads Lefebvre (1991: 87) to consider an alternate base metaphor for social space: water.

> "A much more fruitful analogy, it seems to me, may be found in hydrodynamics, where the principle of the superimposition of small movements teaches us the importance of the roles played by scale, dimension and rhythm. Great movements, vast rhythms, immense waves – these all collide and 'interfere' with one another; lesser movements, on the other hand, interpenetrate."

With water and hydrodynamics in hand, Lefebvre argues that properly understanding *any* 'social locus' of space can only be understood by showing how that locus is mobilized and sometimes interfered with by others and by showing that weaker networks and pathways are superimposed upon it. But then Lefebvre (1991: 87) retreats from this idea, complaining that the water metaphor does not explain what it is that "produces these various movements, rhythms and frequencies; nor how they are sustained; nor, again, how precarious hierarchical relationship are preserved." He then mounts a second objection by arguing that, if taken too far, the metaphor of fluid dynamics could lead to "serious error" because it suggests a particular analysis and explication that will obscure, or cause us to lose sight of the particular place—the point or site of contest—in which social space is produced.

Lefebvre's point is well taken, but only if we also concede that our account of social space must ultimately comport to his dialectical view of the 'world-as-totality' in which countervailing 'rhythms and waves' eventuate into calm seas—meeting on the horizon with the disappearance of the state one presumes. But if we do not conceptualize

'the world' as the material totality of social relations, then we can see that Lefebrve's rejection of water as a base metaphor is in fact an inference that our representations of flowing bodies are not the same as our concrete relations to them, or their non-linear and instable beginnings (see Darrigol, 2005). Rather, he prefers base-metaphors of the land or soil. We might wish to charge this in part to etymology since the idea of *materialism* comes from 'wood' and the idea of building and production that Lefebvre's material/*materiel* distinction depends critically upon in its explanation of how things are refashioned. But we do not have to. We could also take Lefebvre's objection to make the opposite inference: our concrete experiences with water are not represented to us as concepts. They are something else. Something existential, to be sure, yet which also bear upon how we do not inhabit social spaces at points or sites of contest that are given from without in a 'global' or 'radical' way. It isn't a necessary condition that sites of contest must either come from a specific source or as an outcome historical/material dialectics.

An alternate view is that positively constituting ourselves requires that we acknowledge that political spaces are not independent of either 'things' or the *kinds* of things they are. In this respect, Foucault's (2008: 42) rejection of the dialectical tradition offers a point of departure for a new rendering of territory,

> "For what is dialectical logic? Dialectical logic puts to work contradictory terms within the homogenous…A logic of strategy does not stress contradictory terms within a homogeneity that promises their resolution in a unity. The function of strategic logic is to establish the possible connections between disparate terms which remain disparate. The logic of strategy is the logic of connections between the heterogeneous and not the logic of the homogenization of the contradictory."

3.4 Making-up the world: territory

If we pursue Shah's (2012) evocations, it becomes apparent that concrete, physical experiences with space—base metaphors—inflect territory according to actual experiences with things in space. Firstly our bodies, then a great deal more. Yet territory is not a concept, if by concept we mean that alternate conceptual frameworks lead to different ideas of 'the world.' Lefebvre's complaints against water as a base-metaphor reveal him to be in that representational tradition. And while, no doubt, the 'space of the world' can get turned on its head, we can step away from Lefebvre and towards Foucault. In that case, our upside-down world is a different one but it is not represented to us, it is positively constituted by us. So the question is not one of how space is produced. It is rather how heterogeneous things are understood without presuming upon the whole. Space *exists* as different kinds of things are fit together. The 'world' is made-up. This section distinguishes a view of how we can make up the space of the 'world' without Lefebvre.

Ian Hacking has argued that if we take a general view towards Foucault's project of 'constituting ourselves'—a historical ontology—that we will very quickly become embroiled in discussions of different *kinds* of things and the way they fit in projects of world-making. Hacking takes leave from Goodman's (1978: 6) challenge that when we make up the world we always do so using the contingent categories we presently have on hand: "the making is a remaking." This is not an invocation of out-and-out constructionism. It is a way to keep abreast of the fact that to give an account of the 'world' *without* appealing to authority (or, alternately, a Kantian-styled subject) is to do so *with* things, including an account of one's possibilities with respect to *those* things.

Hacking's (2004a,b) is a dynamic nominalism, one that sees us as actively involved in classifying and sorting events into 'things' (see also Bowker and Starr, 1999). We could approach the same issue for physical space. Recall Einstein's (1961) remark that space is unbounded, infinite, and not *in existence* objectively or independently of things. From this view, spaces are brought into being as part of a world. In fact, predating Goodman by a half-century, Stanley Eddington (1928: 230) argued in his 1927 Gifford lectures that Einstein's findings require us to "…build a World – a physical world which will give a shadow performance of the drama enacted in the world of experience." Eddington (1928) struck upon this neighboring idea to Goodman (obviously in a quite different register) by noting that if there is a radical contingency—if both special and general relativity hold—then building-a-world requires specifying both particular kinds of things, *relata* and their *relations*. And further, that we must do so from a positioned perspective that cannot presume upon a global theory nor a radical assessment of fundamental parts. Things are at bottom unstable, as the non-essential nature of water (Vandewall, 2007) and its complex and non-linear dynamics (Darrigol, 2005) both suggest.

As Foucault (1984) suggests, the idea to give a positive account of oneself comes about in the context of modernity. And, in this, his perspective should be distinguished from the views of others who define the 'emancipation' or 'social imaginary' of modernity in negative terms: as freedom *from* the requirement of a uniquely positioned subject. For example, Foucault considers self-constituting freedom as power. But that power is always directed within broader discourses that circumscribe what are real, concrete possibilities for us. So he is hesitant about Habermas' (1996) idea of

'communicative power' where ideal conditions prevail such that the only legitimate power is the force of the better argument.

Before considering world-making positively, it should be distinguished from two other ideas. The first is a pragmatic view of world-making that presumes upon Lefebvre's notions of the 'production of space.' Delaney (2010) takes this view when he argues that we inhabit a "nomosphere" wherein the laws through which we govern ourselves come about as, and are intractably inflected by, how we order space. The *nomos*, in this case, is not the law itself but is inscribed by how the spatial and the legal are given at once in material and phenomenological praxis. Such is the case when we deploy ideas of *foreigner* or *citizen* that make up the world with concrete possibilities for, say, getting a job. Delaney (2010) acknowledges that we could 'imagine' things differently and reorder the kind of spatial and legal orders we operate within. But we could not, on Delaney's (2010) view, reorder space itself—it comes in one, Lefebrvian kind. As argued for earlier, we don't need to follow this totalizing agenda. Delaney may not need to either, but that is a different argument.

This raises a second idea worth distinguishing: perhaps there already exists a spatial order to the world? That idea underlies Carl Schmitt's (2003) notion that the earth has its own *nomos*. In this view the earth births, and remains mother to, spatial order. It is not a convincing idea. First, as Aravamudan (2005) argues, Schmitt's view is mythical. In it, law supervenes from some pre-geographical place as we scratch out and demarcate our place on earth through property lines, agricultural plots, fences and so on. Second, it is evident that when Schmitt talks of the 'earth' he is really talking of land, and productive soil in particular. This comes to the fore in his discussion of order and the sea: since we

have no concrete jurisdictional experience with water—it is soil that is the "stuff" of the earth—it remains outside and troubling to law and to order (Schmitt, 2003). Third, Schmitt follows Weber's idea of the state as a political community subordinated by force and hence only treats power in a juridical sense and does not account for the many reasons or ways that states maintain themselves through other power relations (Surin, 2005). Together, Schmitt's (2003) account may be read not only as his response nihilism, but as an account in which space appears *ex nihilo* once relationships to land, law and the political community are in hand.

With these distinctions in hand, it is evident that whether we think in physical or social terms, space is not independent of things. So it stands to reason that different kinds of things can lead to different kinds of spaces. In this regard, territory is not a concept—if by that term we have something in mind that would allow alternate conceptual frameworks to lead to alternate representations of 'the world'. There are indeed multiple worlds, and territory is key to understanding how they combine, contract, and conflict to make up territory. Territory is of course both a concept and a set of practices, but as Elden (2007: 578, *my emphasis*) acknowledges, when Foucault speaks of territory it is "*more than merely land*…[it is] a rendering of the emergent concept of 'space' as a political category: owned, distributed, mapped, calculated, bordered, and controlled." Here I am not so much interested in what Foucault *said* about territory but rather in how political space is understood as different kinds of space are made-up with respect to different kinds of things. That is, I am interested in how the systems of classification we use to make up categories like "land" shape how we make up the world with different

kinds of things and which lead to different kinds of space and, hence, territory (see generally, Bowker and Starr, 1999).

Hacking (2004a: 278) has taught us that there is something missing in Foucault's emphasis on discourse—something that would connect discourse to the "…lives of ordinary people, or even how they become institutionalized and made part of the structure of institutions at work." He recommends following Erving Goffman's ideas regarding how 'total institutions' allow us to see, in a manner akin to ecological systems, how the way we classify things and act on *those* classification systems loop-back to influence us. Wittgenstein (2001) describes these sorts of effects not as traps, but as entanglements that reveal how we get caught up in our language and in the rules guiding how words relate to concepts *through their use*. His suggestion was that it is really the entanglement with our rules—the ways that discourse loops back to affect meaning—that we want to understand. This is a promising route for understanding how 'territory' becomes *physicalized*. It can help elucidate how the term *is used* to connect us to everyday political spaces by linking land and power. In this sense, we respond to Lefebvre's complaint of losing site of the point or origin of the 'social locus' of space by considering how a "concept is nothing other than a word in its sites" (Hacking, 2004b: 17). And this means attending to the sites in which words are used and, as suggested above, the concrete ways that lived experiences form the metaphors for language. This, of course, does not obviate praxis, it rather makes discourse part of the practice of territory itself and the ways that the world is made up, not represented.

One way to think about these differences in kind is through a case example that juxtaposes how different kinds of 'land' lead to different kinds of 'territory.' To this end

the remainder of the paper works out a study of two different ways of world-making with respect to territory. This example takes the case of water law in southern Alberta, Canada as an instance wherein the *physicalization* of territory leads to an entanglement over what counts in this category called 'land' and how the sites of its use affect what kind of thing 'territory' circumscribes, defines, and curtails in the *relata* and *relations* of political space.

3.5 Territory in the Alberta case

Alberta is a land-locked province in western Canada. For several millennia, it has been a political space as indigenous peoples—First Nations—occupied the land. More recently, and especially virulently after Canada's confederation in 1867, Europeans began a project of settlement over this same land. First Nations are today a reflexive part of the 'Canadian' population, indeed they can trouble any simple notion of that category 'Canadian' (Tully, 1995). One of the persistent difficulties of reconciling European notions of political space with those of First Nations centers on territory. These conflicts involve contests over the fact that 'territory' is *more than merely land* by virtue of the kind of thing 'land' is taken to be. There are different kinds of 'territory' *within* Canada.

In the European version of territory, the 'land' of Alberta began as "Rupert's Land," which named the Hudson Bay Company's agreement with the British Crown regarding natural resource use. This land became part of the Northwest Territories in

1868, a year after Canadian confederation. The Northwest Territories were comprised of five federal administrative jurisdictions, the remnants of which still persist in Canada today. In short order, Canada passed the 1872 *Dominion Lands Act* which created the largest contiguous survey grid in the world with 198 million acres (80 million ha) parceled into one-mile by one-mile sections and quartered into 1.25 million homestead plots of 160 acres (65ha) each. Blomley (2003) has ably showed how the combination of surveying practices, law and 'the grid' violently secured the claims of European sovereignty across much of North America. Here what is of interest is that there is a very specific date to when territory begins in Alberta, and it is followed very quickly by a new relationship to land concretized by legal fiat.

Bypassing the interesting ontological issue of a plurality to the Northwest *Territories* and the relationships of sovereignty and subjectivity in Rupert's land that came about through the Hudson's Bay Company's securing of its interests (see Cavanagh, 2011), it is worth highlighting that all such territories classified 'land' as distinct from 'water.' Once in Canadian jurisdiction, securing sovereignty over the Northwest Territories was accomplished by a transcontinental railroad designed to enable agrarian settlement. And, ignoring the report from the 1857-59 British survey of the international border (in which Palliser (1860) declared southern Alberta as was a "level, sandy, arid plain," comprising the "least valuable portion of the prairie country"), the railway was built across the southern latitudes to prevent American incursion (Mitchner, 1971). In addition to capital, developers were granted 25 million acres (10 117 141ha) of land to develop the railway that they were free to sell as private property to incoming settlers.

The railroad crossed present-day Alberta in 1883. Shortly thereafter conflicts ensued between the ranchers and the settlement project. In particular, ranchers had been leasing large tracts of land from the government and were wary that the private land-holdings of 'settlers' would create property boundaries that eliminated access to water (Potyondi, 1992). In 1886, ranchers obtained federal legislation that created 'water reserves' protecting traditional watering holes for cattle. Thus, the first political space for water in the Northwest Territories was created through the concrete techniques ranchers used to secure land: they put cattle on it (Evans, 1975).

The project of securing land through the *Dominion Lands Act* required a solution for ensuring that settlers would have enough water to establish and maintain an agrarian society. But water was explicitly not a part of the land. This is clear from the fact that under the first water laws for the region, 1894 *North-west Irrigation Act* (NIA), water was declared a wholly public good, with all property vested in the Crown. The NIA's chief architect, William Pearce (1891), had been lobbying heavily for this distinction by arguing that if the desert was to "blossom as the rose" the federal Government must prevent unregulated private competitions that would not result in "anything like the best advantage." Inefficiency, Pearce (1891) continued, occurred because securing the most beneficial uses of water was "of too great a magnitude for ordinary individual or corporate effort…which means waste and only partial development, in other words a considerable loss of national wealth."

The NIA also severed (though did not outright abolish) previous ways of linking land to water, especially the doctrine of riparian rights found in British common law and in which only those owning land that abutted a surface water source enjoyed a 'riparian

right' to water (see Getzler, 2004). The rejection of riparian rights was done to accommodate the fact that many newly arriving settlers held land claims some distance from a water source due to the land tenure grid of the *Dominion Lands Act*. Pearce (1893) therefore argued against riparian rights in favor of a system of prior appropriation based on a 'first-in-time, first-in-right' scheme. Under this formula, water licenses were granted through a priority system and made appurtenant (literally: tied-to) to the land identified in the application for a license (Percy, 1977). Unlike similar doctrines of prior appropriation in the U.S., Canada's system set the priority of water use based on the date of application for a license rather than the actual date on which diversions of water began. As such, under the system of prior appropriation there was *never* a concrete relationship to water, or its use, included under what constituted the 'land' of the Northwest Territories. Water was distinct from, and wholly instrumental to, land.

No substantive changes to water legislation were made when the Northwest Territories were provincially parsed in 1905 and at which time Alberta was created. Jurisdiction over water and other natural resources was transferred in 1930. Over the course of the 20th century what began as a sputtering start to irrigation blossomed into Canada's largest watering project alongside heavy government investment in infrastructure and persistent piecework that fit an instrumental view of water to the *kind* of land created under the newly birthed territory of the Canadian dominion (see Hedges, 1971; AIPA, 2002; de Loë, 2005; Marchildon, 2009). That history is not the particular concern here, but suffice it to say that the lack of fit between Alberta's land tenure system, water, and its agricultural ambitions meant that by the time water legislation was

reformed at the end of the 20th century, legal experts described Alberta's water policy as, "an accident victim in a cartoon, entirely swathed in bandages to cover individual problems and its total shape visible only in outline" (Percy, 1996: 228).

In contrast to the European view, the First Nations view of 'land' did not classify it as a kind of thing distinct from water. And this difference is at the heart of ongoing struggles for recognition of First Nation's water rights on conditions that would respect the *kind* of territory they claim. Eliza Eagle Tail, a First Nation's elder from southern Alberta captures the differences in a 1925 editorial published in a southern Alberta newspaper (quoted in Matsui, 2009: xvii),

> "The most striking difference between the philosophies of the South Western Indians [of Alberta] and Western man is the manner in which each views his role in the universe…The Native's view is that man is part of a delicately balanced universe, in which all components – all life forms and natural elements – interrelate and interact, with no part being no more, or no less important than another…The whiteman's whole system of government is based upon the sacredness of property, that is, the sacredness of his own property…The Indian never regarded land as property, until the whiteman forced him to do so. Now he finds that he must protect his property. He cannot do so by force of arms. He fumbles around for an effective gesture."

The notion of 'fumbling for an effective gesture,' elegantly captures how different ways of *physicalizing* territory loop-back to affect what are considered concrete governance possibilities in a given time and place. It signals how the classification of land fits in a broader way of making up the world. It also highlights how when differences in kind exist so to do different kinds of political space.

The fumbling goes both ways. Because water laws in Alberta have no concrete relationship to the 'land' there is no effective gesture available to reconcile competing views of territory without undermining claims to Canadian sovereignty. For instance, since the American Supreme Court Decision, known as the *Winter's Decision*, it has been recognized that the water rights of indigenous peoples held priority over those of settlers under the doctrine of prior appropriation in the U.S. (Sukhwal, 1991). This is based on two reasonable facts. The first is that the territory 'ceded' to indigenous groups should be interpreted such as the original indigenous signatories to treaties would have interpreted them, which would be to interpret land, water and the rest of the environment as in relationship (Bartlett, 1986; see generally La Duke, 1999). The second is that the promissory sentiment upon which land agreements were made entitled indigenous groups to the activities and resources required for pursuing their traditional forms of life in one place (i.e. not nomadically) (Bartlett, 1986).

In Canada, no similar recognition has been accomplished regarding First Nations water rights. Furthermore, such reconciliation is unlikely to be forthcoming because the competing nations of Canada and First Nations make territory into different kinds of things. For instance, the recognition of a prior right to water *within* the First Nations' classification system of 'land' is *ipso facto* recognition of a different *kind* of territory because it involves a qualitatively different notion of political space. It is the space of a different world. As such, to recognize that *kind* of territory would undermine the broader Canadian claim to absolute ownership of water (it may have even more far reaching effects). The problem is further complicated because there is no concrete relationship of

water to land in the laws governing Alberta. It is rather a bureaucratic system in which water is instrumental to, and distinct from, land itself.

The difficulty is revealed in recent settlements to what is known as Treaty 7, which covers the agreement to 'land' between Canada and the First Nations of southern Alberta. That treaty was put to special scrutiny in the late 1980s during the construction of a dam on the Oldman River, which was opposed by the Peigan First Nation. The impetus for the dam was that water was scarcely available to be allocated under Alberta's prior appropriation system and so a new supply was sought. But the conflict went deeper. As Glenn (1999) describes, the historical denial of First Nations rights to water under interpretations of Treaty 7 (using the Canadian classification of 'land') meant that the conflict over the dam was two fold. On the one hand, the Treaty 7 agreement was designed so that First Nations would themselves take up a non-nomadic form of life, which presumably also includes the water upon which to do so. And since water that rightfully should have been allocated to the Peigan had been allocated to others, recognizing First Nations' implied their prior right to extant water licenses and, if those were to be denied, then to any new water supply. On the other, the Peigan Nation claimed, under their classification of 'land' that they held rights that extended to the portion of the Oldman riverbed in their territory since no ontological distinction separated land from water. This led to a dilemma, according to Glenn (1999: 242) because,

> "[t]o deny the inference that Treaty 7 reserved some water for the Peigan is to admit that our ancestors swindled the Indians; to accept the inference is to admit that subsequent generations, including the present one, swindled the Indians by allocating all of the water to non-natives."

Phare's (2009) landmark contribution to this debate diagnoses precisely what is at issue: the colonization of water. Phare (2009) argues that the competing 'sources' of law are in conflict between First Nations' notions of a creator versus the self-constituting power of the state. But if we look at Phare's incisive nod to colonization in the context of the present discussion of territory, the precision of her diagnosis bears directly. This is because the idea of colonization, which etymologically is linked to the forced change of relationships to land, is here being used to parse out what counts as 'land' and in so doing force a change to the *kind* of territory claimed by First Nations.

The case of territory in Alberta juxtaposes two different ways of classifying land and relationships to it. In this case, because two different classifications of "land" are at issue the forced recognition of one is the colonization of the *kind* of territory that infuses the other. Or, if the pendulum swung the other way—say as the result of a successful court challenge by First Nations—then perhaps a modification of the absolute sovereignty claimed by Canada in favor of recognition of alternate kinds of territory. Furthermore, because the *physicalization* of territory is linked to the power of self-determination of First Nations and the particular form of life they may wish to pursue regarding how they classify the kind of thing land is, the example brings full circle how making up the world loops back to reveal our entanglement with the use of language in particular sites. James Tully (1995; 2008) has thoughtfully shown how we might work towards a new public philosophy precisely by recognizing the 'strange multiplicity' that underlies constitutional diversity in such instances. Here we might return to the spatial dimensions of the broader issue of recognizing different kinds of territory.

3.6 Conclusion

Neither physical nor social space *exists* objectively or independently of things. Rather, its ontological relations are determined by the *kinds* of things through which we make up space—both in terms of relata and their relations—and ourselves in relation to it. But we are not trapped by one way of world-making. Our ontological options regarding the kinds of political space through which we positively constitute ourselves are not constrained to only one kind unless we take a view of 'the world' that appeals to a representational view of concepts themselves. I've suggested reasons to not follow that path and to consider the non-representational ideas others have also found in Foucault, specifically in human geography (Philo, 2012). This view is not the 'gloomy' view of Foucault commented on by Thrift (2007, although Thrift's (2008) more recent work may find crossover with it), nor is it the negative articulation of freedom found in alternate ways of expressing the limits of subjectivity, such as in Habermas. It is rather the positive constitution of things—including the reciprocal relationships we find ourselves in with *those* things. As Lakoff and Johnson (1984) taught us, we *live* by the concrete ways we experience other things in reference to our own bodies. There is therefore an existential quality about our classification systems that we can draw on to see how possibilities change *for us* in a particular space and time (Hacking, 2004a,b).

What does this tell us about the so-called *physicalization* of territory? For one, it tells us that we are not trapped within any view of state territory or in only one way of

classifying 'land' unless we believe there is also only one *kind* of space. I have suggested that view of the world is, as Rorty quipped, well lost. We are not entrapped by, but entangled with, our own practices and categories. As the *kinds* of things through which we constitute ourselves change, the ontology of space unfits along the three axes that Foucault identified are critical for a systematic realization of freedom: the knowledge of things, relations to each other, or relations to ourselves. These axes—knowledge, power and ethics—can be identified in alternate ways of classifying 'land' and in *physicalizing* territory between First Nations and Canada. Here the knowledge of different *kinds* of 'land' leads to different ways of relating to each other as self-determining peoples work out of how individuals' see themselves in reference to the *kind* of territory they use to make up in their world. Where real possibilities do not exist between different *kinds* of political space, the outcome is a fumbling about for effective gestures. And what is called for in such cases is not a move 'beyond' the original colonial relationship to some type of post-colonial or material synthesis. What is required is a decolonization that does not subsume one view of territory under the concrete ways of relating to 'land' found in alternate classification schemas.

Presciently, Aldo Leopold (1966) foresaw this need in his 'land ethic' and his search for an ecological classification of 'land.' Such a view, he believed, would enable the transition away from western views of territory—specifically the Abrahamic relationship to land that entailed exercising dominion over it. In his view a new, ecological *kind* of land would enable the constitution of ourselves not as masters but plain members and citizens of *that* world. The view of Leopold is not here deployed curatively.

It is rather used only to note that there are alternate possibilities for rethinking territory and the normative ways that our view of land becomes *physicalized* as what Shah calls an "important constitutive norm" (Shah 2012: 11). Thus, exit strategies from the territorial trap *exist* when we are willing to rework the kinds of thing we use to make up political space and reorient our relationships to each other and ourselves in relation to them. Such a view requires expanding upon the kind of thing the 'land' is not in mythical terms, but in our growing understanding of the complexity of Earth systems. To use the examples suggested herein, we would need not only a 'land' ethic, but a water ethic as well.

References

Agnew, J. (1994). The territorial trap: the geographical assumptions of international relations theory. *Review of International Political Economy*, *1*(1), 53-77.

Agnew, J. (2009). *Globalization and sovereignty*. Lanham, MD: Rowman & LIttlefield Publishers.

Alberta Irrigation Projects Association, A. I. P. A. (2002, *South Saskatchewan River Basin: Irrigation in the 21st century*. Paper presented at the Summary Report, Lethbridge, AB.

Allan, S. (1997). *The way of water and sprouts of virtue.* Albany, NY: State University of New York Press.

Aravamudan, S. (2005). Carl Schmitt's *The* Nomos of *the* Earth: four corollaries. *South Atlantic Quarterly*, *104*(2), 227-236.

Bartlett, R. H. (1986). *Aboriginal water rights in Canada: a study of aboriginal title to water and Indian water rights.* Calgary: The Canadian Institute of Resources Law.

Blackbourn, D. (2006). *The conquest of nature: water, landscape, and the making of modern Germany.* New York: W.W. Norton & Company.

Blomley, N. (2003). Law, property and the geography of violence: the frontier, the survey and the grid. *Annals of the Association of American Geographers*, *93*(1), 121-141.

Bowker, G. C., & Star, S. L. (1999). *Sorting things out: classification and its consequences.* Cambridge, Mass: The MIT Press.

Brenner, N., & Elden, S. (2009). Henri Lefebvre on state, space, territory. *International Political Sociology*, *3*, 353-377.

Cavanagh, E. (2011). A company with sovereignty and subjects of its own? The case of the Hudson's Bay Company, 1670-1763. *Canadian Journal of Law and Society*, *26*, 25-50.

Colombos, C. (1923). Territorial waters. *Transactions of the Grotius Society*, *9*, 89-100.

Darrigol, O. (2005). *Worlds of flow: a history of hydrodynamics from Bernoullis to Prandtl.* New York: Oxford University Press.

de Loë, R. (2005). In the kingdom of alfalfa: water management and irrigation in southern Alberta. In *Sustaining our futures* (pp. 85-126). Waterloo: Department of Geography.

Delaney, D. (2005). *Territory: a short introduction.* Malden, MA: Blackwell.

Delaney, D. (2010). *The spatial, the legal and the pragmatics of world-making: nomospheric investigations.* New York: Routledge.

Eddington, A. (1928). *The nature of the physical world.* New York: Macmillan.

Einstein, A. (1961). *Relativity: the special and the general theory* (R. Lawson, Trans.). New York: Three Rivers Press.

Elden, S. (2005). Missing the point: globalization, deterritorialization and the space of the world. *Transactions of the Institute of British Geographers*, *30*, 8-19.

Elden, S. (2007). Governmentality, calculation, territory. *Environment and Planning D: Society and Space*, *25*, 562-580.

Elden, S. (2009). Reassessing Kant's geography. *Journal of Historical Geography*, *35*, 3-25.

Elden, S. (2010a). Land, terrain, territory. *Progress in Human Geography*, *34*, 799-817.

Elden, S. (2010b). Thinking territory historically. *Geopolitics*, *15*, 757-761.

Elden, S. (2010c). Thinking territory politically. *Political Geography*, *29*, 238-241.

Elden, S. (2011). Territory. In J. Agnew & J. Duncan (Eds.), *The Wiley-Blackwell companion to human geography* (pp. 260-270). Malden, MA: Blackwell Publishing Ltd.

Evans, S. (1975). Spatial aspects of the cattle kingdom: the first decade, 1882-1892. In A. Rasporich & H. Klassen (Eds.), *Frontier Calgary 1875-1914* (pp. 50-52). Calgary: McClelland and Stewart West.

Fenn, P. (1925). Justinian and the freedom of the sea. *The American Journal of International Law*, *19*(4), 716-727.

Fenn, P. (1926). Origins of the theory of territorial waters. *The American Journal of International Law*, *20*(3), 465-482.

Foucault, M. (1970). *The order of things.* New York: Routledge.

Foucault, M. (1984). What is enlightenment? In P. Rainbow (Ed.), *The Foucault Reader* (pp. 32-50). 1984: Pantheon Books.

Foucault, M. (2008). *The birth of biopolitics: lectures at the College de France, 1978-1979* (G. Burchell, Trans.). New York: Palgrave Macmillan.

Fraser, H. (1925). The extent and delimitation of territorial waters. *Cornell Law Review*, *11*, 455-481.

Getzler, J. (2004). *A history of water rights at common law.* Oxford: Oxford University Press.

Glenn, J. (1999). *Once upon an Oldman: special interest politics and the Oldman River Dam.* Vancouver: UBC Press.

Goodman, N. (1978). *Ways of worldmaking.* Hassocks: Harvester Press.

Gottman, J. (1975). The evolution of the concept of territory. *Social Science Information*, *14*(3), 29-47.

Habermas, J. (1984a). *Lifeworld and system: a critique of functionalist reason* (T. McCarthy, Trans. II). Boson: Beacon Press.

Habermas, J. (1984b). *Reason and the rationalization of society* (T. McCarthy, Trans. I). Boston: Beacon Press.

Habermas, J. (1996). *Between facts and norms: contributions to a discourse theory of law and democracy.* Cambridge, Mass.: MIT Press.

Habermas, J. (2008). *Between naturalism and religion.* Malden, MA: Polity Press.

Hacking, I. (1991). A tradition of natural kinds. *Philosophical Studies*, *61*, 109-126.

Hacking, I. (2004a). Between Michel Foucault and Erving Goffman: between discourse in the abstract and face-to-face interaction. *Economy and Society*, *33*, 277-302.

Hacking, I. (2004b). *Historical ontology.* Cambridge, Mass.: Harvard University Press.

Hacking, I. (2007). Natural kinds: rosy dawn, scholastic twilight. *Royal Institute of Philosophy Supplements*, *61*, 203-239.

Hedges, J. B. (1971). *Building the Canadian west: the land and colonization policies of the Canadian Pacific Railway.* New York: Russel & Russell.

James, W. (1904). Does consciousness exist? *Journal of Philosophy, Psychology and Scientific Methods*, *1*(18), 477-491.

Kant, I. (2003). *Critique of pure reason* (N. K. Smith, Trans. 2 ed.). New York: Palgrave Macmillan.

La Duke, w. (1999). *All our relations: native struggles for land and life.* Cambridge, MA: South End Press.

Lakoff, G., & Johnson, M. (1980a). Conceptual metaphor in everyday language. *The Journal of Philosophy*, *77*(8), 453-486.

Lakoff, G., & Johnson, M. (1980b). *Metaphors we live by.* Chicago: University of Chicago Press.

Lefebvre, H. (1991). *The production of space* (D. Nicholson-Smith, Trans.). Cambridge, Mass.: Blackwell.

Leopold, A. (1966). *A Sand County Almanac: with essays on conservation from Round River.* New York: Oxford University Press.

Malkki, L. (1992). National geographic: the rooting of peoples and the territorialization of national identity among scholars and refugees. *Cultural Anthropology,* 24-43.

Marchildon, G. (2009). The Prairie Farm Rehabilitation Administration: climate crisis and federal-provincial relations during the great depression. *The Canadian Historical Review*, *90*(2), 275-301.

Massey, D. (1999). Space-time, 'science' and the relationship between physical geography and human geography. *Transactions of the Institute of British Geographers*, *24*, 261-276.

Matsui, K. (2009). *Native peoples and water rights: irrigation, dams, and the law in Western Canada.* Montreal: McGill-Queens University Press.

Mesterson, W. (1928). "Territorial waters" and international legislation. *Transactions of the Grotius Society*, *14*, 45-68.

Mitchner, A. (1971). *William Pearce and federal government activity in western Canada, 1882-1904.* PhD University of Alberta, Edmonton.

Palliser, J. (1860). *Further papers relative to the expedition under Captain Palliser of that portion of British North America which lies between the northern branch of the river Saskatchewan and the frontier of the United State; And between the Red River and Rocky Mountains, and thence to the Pacific Ocean.* London: George Edward Eyre and William Spottiswoode.

Pearce, W. (1891). Letter to A.M. Burgess, January 7. *William Pearce Papers, University of Alberta Archives*, *9/2/7/2/6*, 1-14.
Pearce, W. (1893). Unaddressed letter, clause-by-clause comments on Dominion Irrigation Bill, July 10. *William Pearce Papers, University of Alberta Archives,* 1-5.
(Ed.). (1955). *Philosophical writings of Peirce.* New York: Dover Publications, Inc.
Percy, D. (1977). Water rights in Alberta. *Alberta Law Review*, *15*, 142-165.
Percy, D. (1996). Seventy-five years of Alberta water law: maturity, demise & rebirth. *Alberta Law Review*, *35*, 221-241.
Phare, M. S. (2009). *Denying the source: the crisis of First Nations water rights.* Surrey: Rocky Mountain Books.
Philo, C. (2012). A 'new Foucault' with lively implications - or 'the crawfish advances sideways'. *Transactions of the Institute of British Geographers*, *in press*, 1-19.
Potyondi, B. (1992). *Where the rivers meet: a history of the Upper Oldman River Basin to 1939.* Lethbridge, AB: Robins Southern Printing Ltd.
Rorty, R. (1972). The world well lost. *Journal of Philosophy*, *69*, 649-665.
Russell, B. (2009). *The ABC of relativity.* New York: Routledge.
Russell, B. (1929). *Our knowledge of the external world.* New York: Mentor Book.
Sack, R. (1986). *Human territoriality: its theory and history.* Cambridge, NY: Cambridge University Press.
Schmitt, C. (2003). *The nomos of the Earth in the international law of the Jus Publicum Europaeum* (G. L. Ulmen, Trans.). New York: Telos.
Shah, N. (2012). The territorial trap of the territorial trap: global transformation and the problem of the state's two territories. *International Political Sociology*, *2*(1), 57-76.
Sukhwal, B. (1991). Native Americans water rights in the water scarce western United States. ots causes, consequences and probably solutions. *GeoJournal*, *24*, 347-354.
Surin, K. (2005). World ordering. *South Atlantic Quarterly*, *104*(2), 185-197.
Taylor, C. (2004). *Modern social imaginaries.* Durham: Duke University Press.
Thrift, N. (2007). Overcome by space: reworking Foucault. In J. Crampton & S. Elden (Eds.), *Space, knowledge and power: Foucault and geography* (pp. 53-58). Aldershot: Ashgate.
Thrift, N. (2008). *Non-representational theory: space, politics, affect.* New York: Routledge.
Tully, J. (1995). *Strange multiplicity: constitutionalism in an age of diversity.* Cambridge: Cambridge University Press.
Tully, J. (2008). *Public philosophy in a new key* (1-2). Cambridge: Cambridge University Press.
Vandewall, H. (2007). Why water is not H2O, and other critiques of essentialist ontology from the philosophy of chemistry. *Philosophy of Science*, *74*, 906-919.
Wittgenstein, L. (2001a). *Philosophical Investigations* (G. E. M. Anscombe, Trans. 3 ed.). Malden, MA: Blackwell Publishing Ltd.
Wittgenstein, L. (2001b). *Tractatus Logico-Philosophicus* (D. F. Pears & B. F. McGuinness, Trans.). New York: Routledge.
An Act respecting the Public Lands of the Dominion [Dominion Lands Act], 1872 **35** Vict., c.23
An Act respecting the utilization of the waters of the North-West Territories for Irrigation and other purposes [Northwest Irrigation Act], 1894 **57-8** Vict., c.30.

④

ORDERING WATER

4.1 Introduction

Perspectives toward how water fits with social and economic orders have shifted dramatically in the last century, and especially since W.J. McGee (1909) declared it a 'resource' that could be fully controlled for increased human welfare. In the Canadian province of Alberta, for instance, the first European water laws were passed in 1894 and based on "…one important preliminary principal which should without delay be established, without recognition of which no comprehensive scheme can be carried on. This principal is that water is the property of the public" (Pearce, 1891). Yet by 1996 the prevailing social norms had shifted enough that Alberta's Environment Minister stated, "Water is a natural resource…we should be able to investigate selling water and making it a natural resource as are oil, gas, minerals, and promoting them and using them to increase economic development in the province" (Taylor, 1996).

The Alberta case is not unique in its shift from strong government control towards decentralized, and often market-oriented forms of water governance. And parallel to similar shifts elsewhere a similar trend is evident in global water governance. For instance, in 2010 defenders of the 'commons' celebrated the UN Declaration of a Human Right to Water as a victory over water privatization. But the jubilance was short-lived. Soon after, Ban Ki-moon, Secretary-General of the UN, stated that discharging the human right to water did not preclude the use of market mechanisms. This left the

increasingly canonized debate between ‘water as a commodity’ versus ‘water as a common good’ in a predicament: both appear compatible with contemporary governance trends yet to their respective adherents they are often at political and ethical odds (see Bakker, 2010; Sultana and Loftus, 2012).

This paper seeks an explanation of how it became possible to conceive of the market as compatible with virtually any form of water governance—from the local to the global—by tracing how the classification of water as a ‘resource’ has affected how water is ordered. It considers how this reordering of water has come about within the ethos of modernity. After situating water in the modern ethos, it pursues explanations at two levels. The first considers the installation of three propositions that together form a narrative arc for ordering water within modern governance techniques: water abundance, water scarcity, and water security. The second considers the particular transitions underway in the Canadian province of Alberta that are inflected, as are many jurisdictions—Brazil (Ioris, 2010; Conca, 2006), Iran (Balali *et al.,* 2009), Israel (Alatout, 2007, 2009), and across the Andean regions of South America (Boelens *et al.*, 2010) to name a few—by how these propositions reorder water based on a narrative where water was once abundant, has now become scarce and, as scarcity increases, requires treating water as an issue of security.

4.2 Thesis: water and the modern ethos

There is no settled account of water's relationship to the modern ethos, but accounts tend to fall along the axes of knowledge, power and ethics that Foucault (1984) argued affect the practical systems through which we establish relations toward things, each other, and the self. For example, several studies argue the modern ethos was inaugurated by an ontological shift from waters (plural) to water (singular)—H_20—made possible by 19th century advances in chemistry (Hamlin, 2000), mathematics (Gregory, 2001; Darrigol, 2005) and hydrology (Linton, 2010). Emphasis has also been placed on a late 19th and early 20th century period of 'high modernism' wherein bureaucratic control by the state combined with and technical expertise worked to suppress and eradicate social diversity in water management (Swyngedouw, 1999; Warner *et al*., 2007; Molle et al., 2009; Bakker, 2010). Another axis of the literature argues water has held, and continues to hold, multiple meanings for self-understandings and that these form the basis for modern, pluralistic understandings of the politics and ethics of water governance (Espelund, 1998; Blatter and Ingram, 2001; Pradhan and Meinzin-Dick, 2003; Strang, 2004; Whiteley *et al.*, 2008; Wolf, 2008). While none of these elements of the literature operate only along one axis, each emphasizes different dimensions of what is at stake in the ordering of water within the modern ethos.

How should we approach the modern ethos in general, and its relation to water in specific? As Tully (2008) suggests, the axes of relations to things, each other and the self help to distinguish what is at stake between Foucault and political liberals, such as Jürgen

Habermas. Both are keyed towards the goal of identifying the limits of subjectivity without *a priori* appeals to authority. For their part, political liberals have pursued this aim largely as one wherein freedom from authority is guaranteed as rational discourse de-centers arguments away from *a priori* or metaphysical claims regarding things, social relationships or subjects (Taylor, 2007). As such, the public sphere is freed from claims that favor particular metaphysical claims regarding the subject, social or cultural groups, or the symbolic significance of things (Habermas, 1996). As Habermas (2008: 102) defines it, "[p]olitical liberalism is…a non-religious, post-metaphysical justification of the normative foundations of constitutional democracies." From this basis, political liberals seek both fair processes and just institutional structures to balance liberty and popular sovereignty (i.e. Habermas, 1996; Rawls, 2005).

This paper grants the view that political liberalism has been the predominant ideology of modernity and operated alongside the advance of market capitalism (Wallerstein, 2004: 1-22). And it seeks, in turn, to expose how the dominant propositions of water governance—water abundance, water scarcity, water security—are in fact an attempt to reconcile the effects of classifying water as a 'resource' within that ethos. It applies lessons regarding classification and 'world-making' from Hacking (1999; 2004a,b), Goodman (1978) and others (i.e. Bowker and Starr, 1999) to suggest how the ordering water as a resource may be understood. It argues that we can characterize the water ethic of the modern state through the lens of liberalism and the reordering of water 'resources' without *a priori* appeals to notions of the subject, the social, or the symbolic meaning of things. This 'progressive' reordering takes place amidst the deep contingency

of seeking to make up the world without recourse to *a priori* claims or metaphysical backstops. And it creates the space where it is possible to imagine a world in which the market is compatible with any form of water governance.

4.3 The modern water narrative

It is striking to consider that until the 20th century there were no water resources. But then, in 1909, William McGee (1909) declared that it was possible to conceive of water as this kind of thing. What changed? And how did McGee's reclassification of water create a new space of possibilities for understanding physical and social barriers to water control and the concrete ways in which water should be ordered?

Water abundance

McGee has remained a relatively obscure historical figure even though his better-known contemporary, Gifford Pinchot (1998), credits him with the very idea of, and scientific backing for, conservation (see also Cross, 1953). McGee was secretary of the U.S. Inland Waterways Commission, which was the most important coalition in the development of national resource planning in the early 20th century (Westcoat, 2000). In that role, Pinchot (1998) described McGee as the "effective advisor" of every branch of the commission's work. Thus, even though he has received little attention, understanding McGee is central not only for understanding how water became a resource, but for seeing that declaration in context.

When McGee (1909: 48) declared water a resource, part of his aim was to arrest prevailing attitudes that treated water as a "providential blessing" and where its "assumed plentitude" prevented it from being properly exploited. A likely source of these ideas of plenty was natural theology where, as Tuan (1968) has shown, the *idea* of a hydrological cycle came about to explain why a rational god had put such an excess of water on earth (i.e. the oceans). 19th century scientists like Thomas Huxley, Charles Lyell and James Hutton—whom McGee cited with approval—all worked to offer a rational explanation of water's circulation without requiring explanations to reflect an understanding of the 'mind' of the Hebrew god (Tuan, 1968). These scientists, along with McGee and his mentor, Major John Wesley Powell, were interested in "earth-making"—of giving a scientific explanation of physical landscapes and processes (Lacey, 1979).

Parallel to the search for a scientific account of the hydrological cycle was the elimination of a 'subject' who held a unique metaphysical position with respect to the world. McGee took this task seriously, especially as it was undertaken in American pragmatism. There, William James (1904, 1956) argued against the Kantian distinction between things-in-themselves (*noumena*) and our experience of them (*phenomena*) for supposing two kinds of *relata* comprised reality: mind and body. In James' view, 'thoughts' and 'things' are just two names a universal 'stuff' that he referred to as "pure experience." In this view there was no need for a unique subject that came equipped to navigate reality or who could connect empirical observations with the 'rational' mind of a creator. Rather, and as James' contemporary C.S. Peirce (1955: 247) described it, "[t]he

real, then, is that which, sooner or later, information and reasoning would finally result in, and which is therefore independent of the vagaries of me and you. Thus, the very origin of the conception of reality shows that this conception essentially involves the notion of a COMMUNITY, without definite limits, and capable of a definite increase of knowledge." In this, Peirce and other pragmatists brought tests of truth out of the metaphysical domain and into the public sphere of experience (see also Menand, 2001).

The pragmatist view of the COMMUNITY influenced McGee. But it did not do so in a vacuum, and it is necessary to explicate how McGee appropriated it within a broader view of making up the world. First, even though McGee followed the pragmatist critique of the subject, he did not share the view that matter was neutral with respect to mind or body. Rather, as I argued in Chapter 2 (Schmidt and Shrubsole, forthcoming), he followed his mentor John Wesley Powell in the view that if consciousness was to be an emergent property of evolution that this possibility must be intrinsic to matter. In is, McGee (1894, 1897) argued that the 'earth-stuff' was not neutral, but *both* physical and mental. Likewise, Powell (2009: 14) had argued that, "every particle of matter has consciousness."

This ontological basis led McGee to argue that, although evolution did not have a telos, it could be directed. This direction was revealed in the 'progress' from pre-modern societies to western civilization. The apogee of this process was the study of humanity itself: anthropology (McGee, 1897). In this final instance, the scientific study of "man" [sic] required a "human geography" that would fit the scientific and technological control

of nature by advanced societies to an account of Earth systems (McGee, 1897: 430). McGee's (1894, 1897) view here appears as a version of vitalism, the notion that evolutionary systems are not deterministic but self-directed and, furthermore, interact with their environment to improve it in ways favorable to themselves. And although McGee fit himself in the scientific tradition of Bacon, mastery over nature was not for him an end in itself but a requirement of an evolutionary worldview. This is because mastery was required for humans to create the *conditions* of evolutionary progress and this necessitated applying scientific knowledge to direct the haphazard gambits of evolution (McGee, 1897, 1901).

With this vitalist ontology, McGee sought an empirical explanation of how American 'progress' created the conditions for the very *concept* that water is a resource. In a key paper, McGee (1911) lays down the principles for water-power development that links water as a resource to the rights of individuals in COMMUNITY. First, McGee claims that water is the ultimate basis for value—it being the vital contributor to the productivity of land and the health and labor of individuals. It was McGee's (1911: 822, original emphasis) belief that water sharing forms the basis for natural equity, which is reflected in the axiom that "*all the water belongs to all the people.*" Taylor (2004) has identified this idea of a pre-political "we, the people" as a key part of the modern social imaginary that enables the self-constitution of the governed. For McGee there was a vitalist explanation of this people—it was their ability to build a nation on the right of individuals to water. He wrote (McGee, 1911: 817),

> "As the prime necessary of life—the ultimate basis of existence for each of the individuals united in the nation—the water of the country is, under that leading principle of our national existence that all men are equally entitled to life, liberty and the pursuit of happiness, the common and indivisible possession of all—a possession in equity inalienable and indefeasible since no constituent of the nation could alienate or divest himself of his share without surrendering his right to life and so weakening the nation."

For McGee (1911), the most important legal development in securing this basis for the community was the pragmatist Oliver Wendell Holmes' judgment in *Hudson Water Co. v. McCarter*. This was because Holmes rendered water a public resource in a way McGee saw as conforming to the principle of natural equity. McGee (1911: 842) relentlessly repeated claims regarding the common ownership of water and defended pragmatism's experiential test for truth by stating that water can only be regulated, "…as common experience grows with advancing applications of increasing knowledge" and because "…practical experience is the *sine qua non* for wise legislation…"

The idea that water was both *public* and a *resource* provided the bases for entraining water with political liberalism. As the quote above suggests, McGee viewed water as vital to national existence. Accordingly, McGee thought water must be managed by state legislatures and national congress (1911: 825, my emphasis) in the "*public interest* in accordance with the righteous principles of the greatest good to the greatest number for the longest time." This temporal extension of utilitarianism drew on the pragmatist notion of the 'public' (i.e. the community) to extend classic liberalism to the *conditions* that allowed the self-constituting nation to persist and not only those that allow maximal happiness to be achieved at a particular time. As such, the state was charged with creating

the conditions for self-constituting peoples to be free because it was the institutional expression of the community.

McGee was a formidable figure—and he convinced Gifford Pinchot (1998) along with other members of the Inland Waterways Commission that his public version of utilitarianism was the best normative rationale for national resource planning. Critically, that commission created the political space for linking national resource planning to geographically specific areas, particularly the river basin or watershed (Lacey, 1979; Westcoat, 2000). The logical step was short: since water is the basis of all value and is itself directed by gravity over land, then utilitarian maximization naturally fits the spatial units that direct water flows. This view would later come to inform the creation of the Tennessee Valley Authority (TVA), the first (and only) federal commission for river-basin planning that sought to integrate water planning with environmental challenges, economic growth and social goals during the New Deal Era. That history, and the particular controversies it was born out of, is not the precise topic here (see Hubbard, 1961; Hargrove, 1994). Rather, what is of interest is that latent within the TVA model was the political liberalism of McGee, which its second director, David Lilienthal (1944), returned to in promoting the TVA as a model of democracy (Molle *et al.,* 2009). As Sneddon and Fox (2011) carefully detail, the TVA model 'went global' after WWII not only as a framework for water management, but also a techno-political weapon for countering communism with liberal democracy during the Cold War.

To summarize, McGee declared water a resource to arrest prevailing attitudes of water's abundance. Yet his vision of liberal governance legitimated, and even required large interventions into the water cycle in order to create the conditions for progress and satisfy his utilitarian ethic. Others, such as Merchant (1997), note that McGee's public utilitarianism sought to confront the *laissez-faire* resource policies of the late 19th century and its staunch individualism by prompting an ethical shift away from the individual and towards all of humanity—identified here as that indefinitely extended COMMUNITY. In this sense, McGee fits Polanyi's (2001) 'double movement' thesis where rapidly advancing markets came to dominate the aims and ends of social life and public policy and generated attempts to re-embed markets within society. With his vitalist ontology, McGee did not posit 'the social' in an ideal sense (as did the pragmatists) but in the actual, historically sited case of the U.S. Therein, individuals had inalienable and indefeasible rights to water that were held in community with others. Which is to say that, after the elimination of the subject, individuals held public rights.

Water scarcity

McGee's notion that individuals held public rights represents the reordering of water under political liberalism *without* any appeal to a unique subject. His account, however, depended on a synonymy between the "community" and the state. As White (1969) has ably shown, the history of American water management reveals several strategies attempting to bring a 'bounteous and capricious nature' under control through techniques that evolved from single means (i.e. dams) for single ends (i.e. irrigation) to those that used multiple means for multiple ends. This proliferation of strategies finds

political corollaries in the recognition that finite water resources could not be increased indefinitely as the means to create conditions for freedom. Today, these 'supply-side' solutions are increasingly recognized as producing water management dilemmas and, despite the benefits wrought by government control, state water management is frequently criticized as politically gratuitous and inefficient (i.e. Feldman, 1995; Reisner, 1986). This section considers how the notion of water scarcity reordered water alongside the shifting role of the state in water management. This process parallels what Rose (1996) described as the 'death of the social,' which reconfigures the space of the government amongst other actors and institutions. It is one, further, which seeks to govern without synonymy between the state and the community. In this case, water scarcity becomes the proposition that shoulders political liberalism's negation of a unique, *a priori* vision of 'the social'.

The first step in establishing water scarcity was to move away from the bio-evolutionary view of McGee and his claims about natural equity. Throughout the 1950s, there was a growing awareness of the "water problems" in the United States, particularly those of the arid west (Meigs, 1952). By the 1960s, U.S. senators and a special council on hydrology identified a looming "water crisis" and, indeed, a coming "water famine" (U.S. Federal Council, 1962; Wright, 1966; Moss, 1967). At the same time, local and domestic water problems were increasingly understood as tied to global hydrology, which precipitated the declaration of the *International Hydrologic Decade* (IHD) from 1965-1975 (Nace, 1967). As Nace (1969) described the IHD, what was required for an understanding of domestic water scarcity in the U.S. was an appreciation that these concerns were linked to world water patterns.

The link between domestic and international water concerns was accomplished through stationarity: the assumption that the inter-annual variability of the water cycle fluctuates within a stable set of parameters (i.e. Moss, 1979; Milly et al., 2008). This view paralleled new understandings of hierarchically ordered ecosystems, in which systems above the level of the individual organism fluctuated within stable limits (Odum, 1971). Together, these views of systems helped support rational or comprehensive planning, in which all variables affecting management were brought together under a single system of decision making (Wiener, 1972; Lindblom, 1999). In 1977, the first UN Conference on Water in Mar del Plata declared that 'water abundance' was too normative; it failed to acknowledge that there was no principle of 'natural equity' and that water was inequitably distributed in time and space (Biswas, 1978). This inequity provided the normative basis for the claim that water is scarce. As such, the outer limits of variability, not water's relationship to particular societies, established the natural order for social stability and the basis for Rational Planning. The "Policy Options" report at Mar del Plata summarized the view precisely, "[n]atural law dictates, man merely imitates" (Biswas, 1978: 72).

The subsequent challenge of water scarcity was to define parameters that were relevant to domestic governance but not dependent on any particular community. Linton (2010) has argued this was accomplished by evoking a universalized account of the hydrological cycle as a model of expected water flows. But that claim does not seem workable given the above evidence that the basis for water scarcity was variability with respect to the link between local and global water patterns and not deviation from a state of relative abundance. An alternate explanation is that calculating water scarcity actually

involved two standards. The first linked human populations to water supplies, a task achieved by deriving metrics of water scarcity from global data sets that are reported through nationally aggregated figures (i.e. Shikolomonov and Ridda, 2003). The second linked *that* relationship to an account of governance freed from 'the social' and which, although it uses data scaled to the nation state, did not reify the state as the only, or even primary actor in securing actual water access (see Falkenmark *et al.*, 1989; Ohlsson, 2000; Wolfe and Brooks, 2003; Rijsberman, 2006).

By 1992, *Agenda 21* (section 18.3) declared that "water scarcity" demanded integrated water resources management (IWRM). That declaration was informed by a prior 1992 conference in Dublin, which stated water scarcity posed threats to development, health, food security and ecosystems. The Dublin Statement (1992) offers four principles for action: (1) freshwater is a finite and vulnerable resource, essential to sustain life, development and the environment; (2) water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels; (3) women play a central part in the provision, management and safeguarding of water; and (4) water has an economic value in all its competing uses and should be recognized as an economic good.

Conca (2005: 145) has argued that the rise of IWRM, and in particular the Dublin Principles, shifted water management from the domain of the state towards a "new ethic of stakeholder participation." This ethic grew in the 1990s and, although there was never complete consensus, was generally oriented around a definition of IWRM as a "…process which promotes the coordinated development and management of water land, and related resources, in order to maximize the resultant economic and social welfare in

an equitable manner without compromising the sustainability of vital ecosystems" (GWP, 2000). The concept of IWRM, however, has been heavily criticized for what is seen as a failure to engage in the actual social differences affecting governance (i.e. Biswas, 2004; Jeffrey and Geary, 2006). Here I suggest something different. IWRM is not devoid of political or ethical content; rather, it is governance without the subject or 'the social' and in this sense follows in the modern ethos of political liberalism. That is, IWRM seeks to order water without reference to norms that—at least in principle—would give *a priori* preference to particular individuals or any particular community, including the state.

If we pursue the above line of thought, it becomes more understandable why accounts of participatory water management rely on accounts of political liberalism, such as that of Habermas (i.e. Delli Priscolli, 2004; Pahl-Wostl, 2002). Further, it helps to make sense of why IWRM is criticized for ignoring political differences yet has been relatively successful in historical models, such as the watershed authorities in the Canadian province of Ontario, which were developed during a period in which references to 'the social' were not yet anathema (see Mitchell, 2005, 2006). In both cases the difference lies in the distinction between participation in terms that gain authority from a pre-political community (i.e. state or regulatory authority) and forms of political participation that require conforming to procedures that are not themselves contestable. In the latter, the negation of a robust relationship between the state and the political community has left uncertain the status of groups who do not wish to participate in water management on the terms of political liberalism (see also Blomquist and Schlager, 2005). This is because governing without 'the social' requires operating without reference to any

unique claims that communities, such as indigenous groups, may wish to make against the liberal state itself. And this is often the very point of political contests (Tully, 2005).

The discursive shift embedded in IWRM finds domestic corollaries in the United States. Sabatier et al. (2005: 50) characterize the period from the late 1980s until today as one of collaborative governance, where stakeholders are integrated "more or less as equals." One of the upshots of pursuing collaborative governance without 'the social' is that the government is no longer viewed as the only legitimate actor in water management, yet it remains responsible for protecting existing rights regimes. Navigating this changing role of the state opened up the first space for establishing water markets on the claim that markets would respect existing rights but interpret these rights as mechanisms for meeting stakeholder interests (National Research Council, 1992). This way of making up the past without reference to the notions of community that existing water rights emerged within requires departing from the historical rationale of many doctrines that recognized community rights to water (Sax, 1994). One such doctrine is the prior appropriation (first-in-time, first-in-right) of the western U.S. As Schorr's (2005: 5) historical analysis makes clear, "…the doctrine of prior appropriation as developed in 19th century Colorado was viewed as striking a blow at private property in order to advance distributive justice…[and] had that very effect as its central aim." In the American southwest, the reinterpretation of water rights created the possibility to reallocate water through market transfers (Summitt, 2011).

The broader shift towards reordering water rights in terms of economic rationality further de-legitimized the claims of those standing outside of, or who held views of the world incommensurable with, the liberal state (Espelund, 1998). For instance, the claims

of the Pyramid Lake Paiute Tribe in the U.S. were denied by the courts in favor of "not disturbing non-Indian expectations" that, as Wilkinson (2010: 221) notes, meant that because the state had historically denied Indian water rights that the Paiute Tribe could not now access what was legally theirs. Here, the denial of specific communities is further evidence of the negation of 'the social' insofar as what water rights counted *for* was no longer interpreted in terms of how water supported particular forms of life. Rather, rights were interpreted as though free from non-public claims about unique forms of social life, or alternate sources of governance legitimacy, such as may be claimed by indigenous groups (see also Phare, 2009).

In summary, the rejection of water abundance and the rise of water scarcity enables water 'resources' to be governed without reference to the subject or 'the social'. Water scarcity links domestic water patterns to a global account of water distribution while using water scarcity as a proposition for shifting towards an ethic of stakeholder participation. In this transition, governance turns towards the normative arguments of political liberals, such as Habermas, in order to show how participation is legitimate, which further entrains water within the modern ethos of liberalism. In this way, both the individual's public right to water, and the rights formerly granted by the state to particular historical or cultural communities, enter the public sphere.

Water security

Without the subject or the social the final axis to be negated under the liberal ethos is the symbolic interactions through which we relate to things. The rapidly

ascending concept of water security accomplishes this and is the governance proposition that enables the market to be compatible with *any* form of governance. It accomplishes this in two ways. The first is the removal of natural limits to water variability, which in turn renders metrics of scarcity uncertain. The second is by repositioning the public rights of states and individuals without histories of water as anything other than a resource. This type of world-making is described by Roth (2002) as an exercise in 'past-making' where categories from the present are transposed.

Water security works reflexively from the premise that water is scarce. Yet the 'inequitable distributions' of water no longer operate within a stable set of parameters. This rejection of stationarity results from the fact that human activities are altering the outer limits of hydrologic variability (Vörösmarty *et al.*, 2004; Milly *et al*., 2008) and the trend towards mitigating negative externalities of development rather than preventing harms (Vörösmarty *et al.*, 2010). As such, and in a shift that parallels ecological theories regarding how systems adapt under conditions of persistent change (cf. Holling, 1978), water comes to be seen as one part of a changing socio-ecological system. This model is non-hierarchical and one where multiple scales of systems, from individual organisms through to the biosphere do not operate within stable limits and, accordingly, governing them as though they do is pathological because it is counter to how systems self-organize (Holling and Meffe, 1996; Gunderson and Holling, 2002). This view towards governance requires 'adaptive management' (see Holling, 1978; Walters, 1986), a process that seeks social learning through experiential tests. The water literature has recently united 'integrated' and 'adaptive' approaches to seek a fit between the collaborative aims of

IWRM and emerging ecological perspectives (see Ingram and Brugnach, 2012; Falkenmark and Folke, 2010).

What is water security? As Dimitrov (2002) argues, the concept appears initially as a triad of (often conflicting) aims of preventing state conflicts over water, indirect considerations of food security, and the need to protect ecological values (see also Tarlock, 2008). Cook and Bakker (2012) offer the first assessment of how the concept of water security is used, and suggest it should be seen in terms compatible with IWRM. That finding is interesting and is perhaps explained if we consider how water security has worked to make up water as though it has always and only been a resource. That is, water security negates any *a priori* claims about water's symbolic meaning that may be held outside of, or in contradiction to, the modern ethos. Thus, water security negates water as a unique kind of thing and makes all meanings of water public. Pursuing this argument may also contribute to growing concerns about ambiguity in water management that emerges when alternate forms of knowledge production, values and governance are undermined in governance narratives (see Ingram and Brugnach, forthcoming; Brugnach *et al*., 2011).

At the level of the state, water security is reflexively linked to the outcomes of water scarcity and population demands. Gleick (1993) argues that as water becomes increasingly scarce, the likelihood of international water conflicts increases and water becomes an issue of state security. The root causes of water security from this perspective tie population growth and limited water supplies to interstate conflicts (LeRoy, 1995).

Eckstein (2010) further links the problem of international coordination to the unpredictable effects of climate change on regional hydrology, which implies that there is little predictive basis for governing the physical forcing mechanisms of water security. Alternately, Tarlock and Wouters (2010) have argued that thinking solely in terms of international security excludes scalar shifts involved in the trend towards devolved water governance and thus link water security to participatory management.

From the perspective of the subject, water security is reflexively linked to human health and development. The UNDP's (2006: 9) human development report states water scarcity is exacerbated by unequal power relationships, and is "consigning large segments of humanity to lives of poverty, vulnerability and insecurity." As such, water security internalizes the outcomes of the liberal ethos by linking the demand for equality to the requirement for states to protect individual security of the person, such as through flood control, while interfering as little as possible in the private sphere (i.e. Grey and Sadoff, 2007). In this respect, achieving a "water secure world" requires parsing the "welfare task (the task of government) from the business task (which service organizations should be asked to do)" (World Water Council, 2000: 3).

The attempt to link human health, national wealth and non-linear Earth systems without appealing to symbolic values has led to a new metaphor. In it, water security is "…the gossamer that links together the web of food, energy, climate, economic growth and human security challenges that the world economy faces over the next two decades" (World Economic Forum, 2011: 1). The World Economic Forum's (2011: 1) recent book,

Water Security, ties water security to "the structural problem in how we manage water across the web of our global economy" and warns that the problem of water security could lead to a retreat from globalization. This threat requires "multi-stakeholder platforms [that] can help to generate the necessary consensus" and drive new normative approaches for governance reform (World Economic Forum, 2011: 13). Here we see that the outcome of *not* achieving water security is a retreat back to 'the social' (i.e. anti-globalization) while the 'gossamer' of water security just is what links individual human security to health—and which includes food security, ecological security and the prevention of interstate conflict. As such, security is not premised on anything unique about individual subjects, particular communities, or water itself. Rather, and emphasizing this point, the World Economic Forum (2011) presents arguments that suggest even human rights be construed as property rights. This would allow water to be a resource like any other, free to circulate without the hindrances of antiquated, non-modern governance structures that tie it to notions of inalienable rights, the unique claims of social communities, or symbolic meanings regarding water's unique properties. Seen in this sense, water is security is the proposition that makes it possible to see the market as compatible with virtually any form of governance, even those that have arisen in direct opposition to it.

Considering the arguments developed above, one finding that it is now possible to make is that there is no sharp divide between the *ethos* of political liberalism and what is usually termed neo-liberalism—where the latter represents a significant departure from the former toward forms of free markets. The argument for this is that the latter just is

governing without *any* of the three axes—the subject, the social, or the symbolic—formerly used to make non-public claims. In the case of water, all relations to things claimed unique and the water that makes individual and social lives both possible and meaningful, become a matter of public governance. In this final instance, all relations to things, each other, and the self are construed through the ethos of political liberalism and this entails that all claims are candidates for public adjudication in participatory arrangements. So while unique individuals, communities and meanings of water all still exist, governance legitimacy is sought without reference to them. Together, the successive negations of the subject, the social and the symbolic form the water ethic of the modern state.

4.4 Case study: Alberta

The foregoing arguments suggest a way to see the classification of water within the modern ethos, particularly as the classification of water as a 'resource' emerges in the U.S. and extends globally. Parallel to that process, the propositions of water abundance, water scarcity and water security arise to meet the challenges of ordering water *within* the modern ethos and the demands of liberalism to free relations to things, each other and the self from *a priori* claims. The outcome is that water is ordered wholly within the public sphere and without reference to unique subjects, societies or symbolism. This case study considers how such transitions take place on the ground, in the land-locked province of Alberta, Canada. The Alberta case also evinces tendencies towards the 'double movement' that Polanyi (2001) used to explain how market expansion may be checked in

definite directions by countervailing forces. Seen within the modern ethos, however, this 'double movement' gets thinner on the ground as options for responding to market expansion are removed by liberalism's 'progressive' negations and the narration of water in terms of abundance, scarcity and security.

Water abundance

Alberta's water laws are thoroughly modern, particularly in their beginnings, which denied that the indigenous First Nations of Turtle Island (North America) had a culture or history that shaped their experiences with place (Matsui, 2009; Phare, 2009). Proceeding on this basis, the first European water law was the 1894 *North-west Irrigation Act* (NIA), which nowhere mentions indigenous peoples. The NIA explicitly tied water to the community as a way to prevent the kinds of *laissez-faire* individualism witnessed in the U.S. William Pearce (1891), who drafted large sections of the NIA, remarked that it is better to regulate first than to try to "evolve order from chaos." In this regard, Canadian water law began by eliminating the rights of all "private persons" to water and on this point Pearce (1891) was adamant and uncompromising, stating that regardless of whether *development* was private or controlled by government that,

> "…there is one important preliminary principal which should without delay be established, without recognition of which no comprehensive scheme can be carried on. This principal is that water is the property of the public."

The 'public,' for Pearce (1891), was found in the synonymy of the 'community' and the modern state. He suggested that, "[w]ater in a country dependent on irrigation is so precious that it is a duty the Government owes to the community, or, in other words, that

the community owes to itself, to prevent its being captured by monopolists…" This view falls within the scope of arguments forwarded by McGee insofar as it was designed to curtail private development, which did not result in "anything like the best advantage" for the nation (Pearce, 1891).

The rejection of rights for private individuals was carried over into water doctrines that defined water as a community good. This was accomplished through the adoption of the doctrine of prior appropriation that had evolved in the U.S. as a means to counter capitalist speculation in water rights (see Schorr, 2005). A second way water was secured to place was through the doctrine of appurtenance that tied water licenses to land such that acquiring an existing license required acquiring the land to which it was tied. Sax (1994: 15) has argued that this doctrine values community over efficiency in recognition that "water in place is a type of wealth." Finally, property in water was vested solely to the Crown—initially at the federal level and then transferred to the province in 1930. In 1931, Alberta passed the *Water Resources Act* with no substantive changes to water licensing system of the *North-west Irrigation Act.*

The public nature of water in Alberta engendered the belief that the community should create the conditions for the pursuit of freedom. After fits and starts with private irrigation development (see de Loë, 2005), heavy government investment led to large increases in water supply. The conditions for a prosperous agrarian society were furthered through the creation of the Prairie Farm Rehabilitation Administration (PRFA) in 1934. The PFRA was a federal institution designed to rehabilitate the drought riddled

areas of the southern prairies through capital investment and expert committees (Marchildon, 2009), which planned and implemented single purpose, single means strategies. Alberta had a contentious relationship with the PFRA because it had its own irrigation expertise but lacked the capital to do as it pleased (Marchildon, 2009). By the early 1970s, Alberta was solely responsible for water infrastructure and the large irrigation economy of its southern regions (AIPA, 2002).

Water scarcity

Growing environmental awareness in the 1970s led Alberta to pass its *Clean Water Act* in 1971 (Wood et al., 2010). By the 1980s, there was growing concern with water scarcity, a topic addressed at a 1982 policy conference (see Sadler, 1983). At the same time, there was a trend away from the very idea that any notion of 'the social' was part of governing water. It happened in fairly short order. In 1985 the Royal Commission on the Economic Union and Development Prospects for Canada argued that, "*The task of governments is to meet the preferences of citizens who happen to be in the provinces or in the country they have been elected to govern.* Meaningful provincial communities do not exist, except as provinces" (Breton, 1985: 505: original emphasis). By 1992, Kennett (1992: 10) concluded that, "…conceptions of community appear to have limited relevance to the design of federalism as it relates to water management." On the ground, the severance of federal-provincial water relations in Alberta, coupled with new legislation that disconnected water from any particular community, created the space for

water to be ordered without respect to 'the social' and to enter the era of stakeholder governance.

The severance of federal-provincial water relations was finalized in a controversy over the Oldman River Dam in southern Alberta. Until then, tensions regarding the PFRA and other federal involvements had worked according to the division of powers enshrined in the *Natural Resources Transfer Act* of 1930, which granted Alberta jurisdictional control over water save for fishing and navigation. The construction of the Oldman Dam, however, cut to the quick of what role the 'community' had in legitimating water use decisions. Glenn (1999) provides the authoritative account of how downstream ecological effects to fisheries and the upstream flooding of indigenous land, cultural sites (mainly archaeological) and private property concerns united a coalition against the project. Emerging from that coalition was a legal challenge to the dam's environmental impacts that resulted in a federal panel struck to review the project in 1991.

The federal review panel held public hearings regarding the Oldman Dam in the fall of 1991 and ultimately recommended that the dam be decommissioned (Glenn, 1999). But through a series of legal maneuvers and challenges that ultimately went to the Supreme Court of Canada, the outcomes of the federal environmental assessment process were never implemented. Further, the Oldman Dam became a harbinger for federal-provincial relations as other provinces joined Alberta in protesting what was seen as undue federal interference in provincial affairs (Glenn, 1999). The dam was virtually complete by 1992 and, with a new federal government elected in Canada in 1993, there

was little appetite to court controversy with Alberta over the project. Glenn (1999) concludes his study by following Charles Taylor's assessment that isolated communities, such as First Nations, are unlikely to gain substantive purchase against the procedural norms of federal environmental politics without a broader normative shift across society as a whole. In the argument being pursued here, however, such a view is unlikely to materialize when procedural norms *themselves* are premised on ordering water without respect to any particular community.

Also in 1991, and scheduled to overlap with the federal panel's public hearings over the Oldman Dam, the Alberta Government began a public review of the *Water Resources Act*. Glenn (1999) argues this was an attempt to mitigate the federal review of the Oldman Dam by overwhelming the public with demands to participate in both the Oldman review process and a broader policy review. Provincial policy reforms targeted two problems of tying water to the community. The first was that, because original licenses were appurtenant to land and did not expire, it was difficult to transfer water rights as social demands grew and scarcity increased (Percy, 1977, 2005). The second was that the only physical criteria used to limit licenses were "Instream Objectives," which were set only to ensure that new licensees would not conflict with water already allocated (Alberta Environment, 2005). The result was that water was over-allocated with adverse effects to the environment. For a time, patchwork regulations were used to solve problems of over-allocation in southern Alberta. But as Percy (1996: 228) remarked, by the time Alberta 'euthanized' the *Water Resources Act*, the patchwork amendments and regulations that had evolved to support it rendered Alberta's water policies "…an

accident victim in a cartoon, entirely swathed in bandages to cover individual problems and its total shape visible only in outline." On April 30, 1996, the government introduced Bill 41, the *Water Act*.

The *Water Act* was pushed quickly into law through a special government session held in the summer of 1996. It tolled the death knell for 'the social' and the idea water could be the property of a particular community. That possibility had existed in the *Water Resources Act* by a provision (sec. 11(1)) that allowed 'the public' to apply for water licenses that would keep water in its natural state. It is not clear that any licenses had been granted under section 11(1) but the *Water Act* dropped the clause. The removal was opposed in legislative and committee debates on the grounds that it eliminated the possibility of the public to secure its own interests (i.e. Collingwood, 1996). To this the government responded that a newly created Director would hold discretionary powers over the 'public interest' and could grant the government a license for environmental protection (Lund, 1996). That is, the government could apply and receive a license for the water it already owned.

The *Water Act* further disconnected water from the community in three other sections (see Alberta Environment, 2003a). The first two made it possible to transfer water apart from land titles (although new licenses are still granted under the doctrine of appurtenance) and legalized the creation of a water market that would operate between willing buyers and sellers. This regulated market requires the Director to approve water licenses and to weigh the benefits of transfers against the 'public interest.' Finally, the

Water Act created the conditions for the development of regional watershed plans that could be developed by persons other than the government, i.e. stakeholder groups.

Together, the defense of the *Water Act* by the government and the types of changes it engenders suggest a subtle and important shift: the government is no longer synonymous with a unique community. This leaves the idea that water is a public property disconnected from the former sense of community that supported state claims. But it is not a formal declaration of water's private status. Rather, the 'death of the social' leaves water a 'thing' to be governed among other things by retelling the history of state licensing mechanisms *as though* the possibility for market governance had always existed. This shift in argumentation was supported by several economic reports in the 1990s that augured for Alberta's historical water licenses to be converted into marketable commodities that would increase water use efficiency and the security of existing rights holders (Horbyluk and Lo, 1998; Freeman and Veeman, 1993).

The *Water Act* was passed on 27 August 1996 when, citing the 'pressing needs' for water in southern Alberta, the government closed debate. As one member of the government put it, "[t]his is a popular Bill in southern Alberta, and we need it. Unless you live there, unless you know the water shortages that we experience daily in southern Alberta, you cannot appreciate it" (Taylor, 1996: 2155). That same member, Lorne Taylor (1996: 2156), went on to argue for precisely the view one would expect under the ethos of political liberalism, that the market should be expanded to treat scarce water *resources* as no different from others:

> "Water is a natural resource…I think we should be able to investigate selling water and making it a natural resource as are oil, gas, minerals, and promoting them and using them to increase economic development in the province."

The *Water Act* came into force in 1999. Two years later, problems of water scarcity became acute when Alberta experienced its worst drought since western settlement. That year was the first time that the total water allocations exceeded available water (Alberta Environment, 2005). The drought sparked a series of studies on the natural variability of water flow in southern Alberta. These studies revealed that the 20th century record was atypically wet when compared to previous centuries and that warming temperatures were shifting precipitation patterns in ways that would effectively reduce water availability while increasing demand through higher rates of evapotranspiration (i.e. Sauchyn et al., 2003; Schindler and Donahue, 2006).

Water security

Alberta created its first water market in 2002 and in 2003 passed its *Water for Life* strategy. The former has seen limited activity because of high transaction costs incurred by a strict regulatory regime. The latter is of particular interest because it catalyzed the shift towards collaborative or 'shared' governance in Alberta through the creation of stakeholder governance under a provincial Water Council and regional watershed planning and advisory councils (WPACs). WPACs now exist for 11 river basins in the province and have various levels of institutional maturity, primarily because many were formerly civil society groups that arose in response to government decisions around the Oldman Dam. This paper does not consider the experiences of these WPACs, but rather

highlights the discursive framework of *Water for Life*, which provides for a new water ethic in Alberta.

The first mention of Alberta's new ethic appears in 2002, in a ministerial forum giving input on *Water for Life*. There it was noted that, "the provincial government must challenge Albertan and user sectors to establish and implement a water conservation ethic…" (McMillan, 2002). Constructing this ethic has since proceeded around 'things.' For instance, a 2003 draft of the strategy begins with a faded image of a boy fishing off a dock with white letters spelling "all living things need water to survive" (Alberta Environment, 2003b). This shift towards 'things' was carried through in the final strategy but without any symbolic imagery: the same phrase sits starkly against a blank page before the introduction of the *Water for Life* strategy (Alberta Environment, 2003c). The *Water for Life* strategy does not use the term 'ethic' but the Alberta Water Council (2007: 1) interprets it as creating "the possibility for a new water ethic in Alberta—one based on conservation, sound science and shared responsibility for watershed management planning." The *Water for Life* strategy creates this possibility by weaving a new narrative through the link of water abundance, water scarcity and water security. It is worth quoting at length:

> "Population growth, droughts and agricultural and industrial development are increasing demand and pressure on the province's water supplies, and the risk to the health and well-being of Albertans, our economy and our aquatic ecosystems.
>
> In the past, Alberta has been able to manage our water supply while maintaining a healthy aquatic environment because there has been a relatively abundant, clean supply to meet the needs of communities and the economy.

> However, fluctuating and unpredictable water supply in recent years has stressed the need to make some major shifts in our approach to managing this renewable, but finite resource."

At the provincial level, the Alberta Water Council (2009) has recommended a more relaxed regulatory regime that would encourage market activity by reducing transaction costs. The Water Council, however, could not find consensus amongst stakeholders regarding how to structure the water market while safeguarding the environment. It nevertheless forwarded a number of 'non-consensus' recommendations in this regard. This highlights a tension in Alberta's evolving water ethic and the participatory nature of policy development. In particular, it is expected that an ethic can be found that does not appeal to any unique *kinds* of water other than as a resource. For instance, the Alberta Water Council (2007: 27) suggests that, "[f]rom a conservation perspective, promoting the full value of water can encourage a greater conservation ethic if Albertans realize water is not a 'free' and 'unlimited' resource, and that it has value beyond our daily and economic needs (e.g., water has intrinsic values such as for scenic enjoyment)." This rebuffs abundance (i.e. unlimited water) in favor of scarcity valuation (i.e. water is not free) as the condition for growth. At the same time, it is not clear how "intrinsic values" are understood if the model of participation cannot prevent "non-consensus" recommendations in public policy. This is especially the case since the Water Council (2009) argues Alberta should foster a "productivity ethic" that links economics to the 'wise use' of resources. Here, it seems, the remaking of the world situates the 'value' of things as whatever remains after water is ordered without reference to the subject, the social or symbols.

4.5 Conclusion

Water abundance, water scarcity and water security emerge alongside modernity's elimination of the subject, the death of the social and the suffocation of the symbolic. They result from a new kind of water—*resource*. That classification emerges in the United States but has gained global influence. And while its uptake is place specific, this kind of water allows the world to be made up in the modern ethos of liberalism and forms a narrative arc linked by abundance, scarcity and security. In this ethos, the water ethic of the modern state requires *all* places be sited such that it is possible to see markets as compatible with any form of water governance and in which there is an exchange of the right for the good. That is, an exchange of procedural fairness under the terms of the modern ethos for considerations of substantive conceptions of 'the good' that may be held under alternate forms of life.

The case study from Alberta details how the possibility of a new water ethic has been created alongside the 'progressive' negation of private rights, community rights, and any special status of water that would prevent its circulation in the economy. The question that then arises is whether the unique individuals and communities affected by this 'new' ethic can effectively govern relations to water in terms that satisfy them. The complimentary and important dimension to this changing discursive frame is what Hacking (2004a) identifies as the 'face-to-face' interactions through which we govern our relationships to things, each other and ourselves. As alluded to above, in Alberta this will require studies of how practitioners navigate the ethic of *Water for Life* strategy in the

rough and tumble of everyday decision making. But confronting this ethic is not only a material matter, it also requires viewing our relationship to things, each other, and ourselves as positively constituted by us. That is, outside the ethos of political liberalism and in a space where the water ethic of the modern state can be evaluated for its efficacy in supporting relationships to things, each other, and the self.

References

Alatout, S. (2007). From water abundance to water scarcity (1936-1959): a 'fluid' history of Jewish subjectivity in historic Palestine and Israel. In S. Sufian & M. Levian (Eds.), *Reapproaching borders: new perspectives on the study of Israel-Palestine* (pp. 199-219).

Alatout, S. (2009). Bringing abundance into environmental politics: constructing a Zionist network of water abundance, immigration, and colonization. *Social Studies of Science*, *39*, 363-394.

Alberta Environment (2003a). *Water Act: Administrative guideline for transferring water allocations*. Pub. No. I/949. Edmonton, Alberta.

Alberta Environment (2003b). *Water for life: draft for discussion: Alberta's strategy for sustainability.* Pub. No. I/936. Edmonton, Alberta.

Alberta Environment (2003c). *Water for life: Alberta's strategy for sustainability.* Pub. No. I/955. Edmonton, Alberta.

Environment, A. (2005). *South Saskatchewan River Basin water allocation (revised)*. Edmonton: Alberta Environment, regional services, southern region.

Alberta Irrigation Projects Association, A. I. P. A. (2002, *South Saskatchewan River Basin: Irrigation in the 21st century*. Paper presented at the Summary Report, Lethbridge, AB.

Alberta Water Council (2007). *Review of implementation progress of Water for Life, 2005-2006.* Edmonton, Alberta, pp. 34.

Alberta Water Council (2009). *Recommendations for improving Alberta's water allocation transfer system.* Edmonton, Alberta, pp. 68.

Bakker, K. (2010). *Privatizing water: governance failure and the world's urban water crisis.* Ithaca: Cornell University Press.

Balali, M. R., Keulartz, J., & Korthals, M. (2009). Reflexive water management in arid regions: the case of Iran. *Environmental Values*, *18*, 91-112.

Biswas, A. (2004). Integrated water resources management: a reassessment. *Water International*, *29*, 248-256.

Biswas, A. K. (Ed.). (1978). *United Nations water conference: summary and main documents.* Oxford: Pergamon Press.

Blatter, J., & Ingram, H. (Eds.). (2001). *Reflections on water: new approaches to transboundary conflict and cooperation.* Cambridge: Massachusetts Institute of Technology.

Blomquist, W., & Schlager, E. (2005). Political pitfalls of integrated watershed management. *Society and Natural Resources*, *18*(2), 101-117.

Boelens, R., Getches, D., & Guerva-Gill, A. (Eds.). (2010). *Out of the mainstream: water rights, politics and identity.* London: Earthscan.

Bowker, G. C., & Star, S. L. (1999). *Sorting things out: classification and its consequences.* Cambridge, Mass: The MIT Press.

Breton, A. (1985). *"Supplementary Statement" in Royal Commission on the Economic Union and Development Prospects for Canada* (Vol. 3). Ottawa: Minister of Supply Services Canada.

Briscoe, J. (2010). Practice and teaching of American water management in a changing world. *Journal of Water Resources Planning and Management*, *July/August*, 409-411.

Brugnach, M., Dewulf, A., Henriksen, H. J., & van der Keur, P. (2011). More is not always better: coping with ambiguity in natural resources management. *Journal of Environmental Management*, *92*, 78-84.

Brugnach, M., & Ingram, H. (forthcoming). Ambiguity: the challenge of knowing and deciding together. *Environmental Science and Policy*,.

Collingwood, H. (1996). Government bills and orders: committee of the whole, August 27. *Alberta Hansard,* 2441-2458.

Conca, K. (2006). *Governing water: contentious transnational politics and global institution building.* Cambridge: MIT Press.

Cook, C., & Bakker, K. (2012). Water security: debating an emerging paradigm. *Global Environmental Change*, *22*(1): 94-102.

Cross, W. (1953). W.J. McGee and the idea of conservation. *Historian*, *15*, 148-162.

Darrigol, O. (2005). *Worlds of flow: a history of hydrodynamics from Bernoullis to Prandtl.* New York: Oxford University Press.

de Loë, R. (2005). In the kingdom of alfalfa: water management and irrigation in southern Alberta. In *Sustaining our futures* (pp. 85-126). Waterloo: Department of Geography.

Dimitrov, R. (2002). Water, conflict, and security: a conceptual minefield. *Society and Natural Resources*, *15*(8), 677-691.

Statement, D. (1992). The Dublin statement on water and sustainable development. Retrieved from http://www.wmo.ch/pages/prog/hwrp/documents/english/icwedece.html.

Eckstein, G. (2010). Water scarcity, conflict, and security in a climate change world: challenges and opportunities for international law and policy. *Wisconsin International Law Journal*, *27*(3), 410-461.

Espelund, W. N. (1998). *The struggle for water: politics, rationality, and identity in the American Southwest.* Chicago: University of Chicago Press.

Falkenmark, M., & Folke, C. (2010). Ecohydrosolidarity: a new ethics for stewardship of value-adding rainfall. In P. G. Brown & J. J. Schmidt (Eds.), *Water ethics: foundational readings for students and professionals* (pp. 247-264). Washington DC: Island Press.

Falkenmark, M., Lundqvist, J., & Widstrand, C. (1989). Macro-scale water scarcity requires micro-scale approaches: aspects of culnerability in semi-arid development. *Natural Resources Forum*, *13*, 258-267.

Feldman, D. (1995). *Water resources management: in search of an environmental ethic.* Baltimore: John Hopkins University Press.

Feldman, D. (2007). *Water policy for sustainable development.* Baltimore: John Hopkins University Press.

Foucault, M. (1984). What is enlightenment? In P. Rainbow (Ed.), *The Foucault Reader* (pp. 32-50). 1984: Pantheon Books.

Freeman, R., & Veeman, T. (1993, *Economic aspects of transferable water rights in Alberta*. Paper presented at the Water and the wilderness: development, stewardship and management.

Gleick, P. H. (1993). Water and conflict: fresh water resources and international security. *International Security*, *18*(1), 79-112.

Glenn, J. (1999). *Once upon an Oldman: special interest politics and the Oldman River Dam.* Vancouver: UBC Press.

Global Water Partnership (2009). *Global water security: submission by the Global Water Partnership to ICE/RAE/CIWEM Report to professor John Beddington, chief scientific advisor to HM Government.* Stockholm.

Goodman, N. (1978). *Ways of worldmaking.* Hassocks: Harvester Press.

Gregory, D. (2001). (Post) Colonialism and the production of nature. In N. Castree & B. Braun (Eds.), *Social nature: theory, practice and politics* (pp. 84-111). Malden, MA: Blackwell.

Grey, D., & Sadoff, C. W. (2007). Sink or swim? Water security for growth and development. *Water Policy*, *9*, 545-571.

Gunderson, L., & Holling, C. S. (Eds.). (2002). *Panarchy: Understanding transformations in human and natural systems.* Washington, DC: Island Press.

Habermas, J. (1996). *Between facts and norms: contributions to a discourse theory of law and democracy.* Cambridge, Mass.: MIT Press.

Habermas, J. (2008). *Between naturalism and religion.* Malden, MA: Polity Press.

Hacking, I. (1999). *The social construction of what?* Cambridge, Mass.: Harvard University Press.

Hacking, I. (2004a). Between Michel Foucault and Erving Goffman: between discourse in the abstract and face-to-face interaction. *Economy and Society*, *33*, 277-302.

Hacking, I. (2004b). *Historical ontology.* Cambridge, Mass.: Harvard University Press.

Hamlin, C. (2000). 'Waters' or 'water'? - master narratives in water history and their implications for contemporary water policy. *Water Policy*, *2*, 313-325.

Holling, C. S. (Ed.). (1978). *Adaptive environmental assessment and management.* New York: John Wiley & Sons.

Holling, C. S., & Meffe, G. K. (1996). Command and control and the pathology of natural resource management. *Conservation Biology*, *10*(2), 328-337.

Horbulyk, T., & Lo, L. (1998). Welfare gains from potential water markets in Alberta, Canada. In E. William, M. Rosegrant, & A. Dinar (Eds.), *Markets for water: potential and performance* (pp. 241-257). Boston: Kluwer Academic Publishers.

Ioris, A. (2010). The political nexus between water and economics in Brazil: a critique of recent policy reforms. *Review of Radical Political Economics*, *24*(2), 231-250.

James, W. (1904). Does consciousness exist? *Journal of Philosophy, Psychology and Scientific Methods*, *1*(18), 477-491.

James, W. (1956). *The will to believe and other essays in popular philosophy*. New York: Dover Publications, Inc.

Jeffrey, P., & Geary, M. (2006). Integrated water resources management: lost on the road from ambition to realisation? *Water, Science & Technology*, *53*(1), 1-8.

Kennett, S. A. (1992). *The design of federalism and water resource management in Canada* (Research Paper No. 31). Kingston: Institute of Intergovernmnetal Relations, Queens University.

Lacey, M. J. (1979). *The mysteries of earth-making dissolve: a study of Washington's intellectual community and the origins of American environmentalism in the late nineteenth century*. PhD George Washington University, Washington, DC.

LeRoy, P. (1995). Troubled waters: population and water scarcity. *Colorado Journal of International Environmental Law*, *6*, 299-326.

Lilienthal, D. (1944). *TVA; Democracy on the march.* New York: Harper & Brothers.

Lindblom, C. (1999). A century of planning. In K. M. Meadowcroft (Ed.), *Planning sustainability* (pp. 39-65). New York: Routledge.

Linton, J. (2010). *What is water? The history of a modern abstraction.* Vancouver, BC: UBC Press.

Lund, H. (1996). Government bills and orders: committee of the whole, August 27. *Alberta Hansard,* 2441-2458.

Marchildon, G. (2009). The Prairie Farm Rehabilitation Administration: climate crisis and federal-provincial relations during the great depression. *The Canadian Historical Review*, *90*(2), 275-301.

Matsui, K. (2009). *Native peoples and water rights: irrigation, dams, and the law in Western Canada.* Montreal: McGill-Queens University Press.

McGee, W. J. (1894, *The earth the home of man.* Paper presented at the Special Papers: Anthropological Society of Washington, Washington, DC.

McGee, W. J. (1897). The science of humanity. *Science*, *6*(142), 413-433.

McGee, W. J. (1909). Water as a resource. *Annals of the American Academy of Political and Social Science*, *33*, 521-534.

McGee, W. J. (1911). Principles of water-power development. *Science*, *34*(885), 813-825.

McGee, W. J. (1901). Man's place in nature. *American Anthropologist*, *3*(1), 1-13.

McMillan, B. (2002). *Water for life: minister's forum on water: summary report of advice received.* Edmonton: Equus Consulting Group.

Meigs, P. (1952). Water problems in the United States. *Geographical Review*, *42*(3), 346-366.

Menand, L. (2001). *The metaphysical club: a story of ideas in America.* New York: Rarrar, Straus and Giroux.

Merchant, C. (1997). Fish first! The changing ethics of ecosystem management. *Human Ecology Review*, *4*(1), 25-30.

Milly, P. C. D., Betancourt, J., Falkenmark, M., Hirsch, R. M., Kundzewicz, Z. W., Lettenmaier, D. P. et al. (2008). Stationarity is dead: whither water management? *Science*, *319*, 573-574.

Mitchell, B. (2005). Integrated water resource management, institutional arrangements, and land-use planning. *Environment and Planning A*, *37*, 1335-1352.
Mitchell, B. (2006). IWRM in practice: lessons from Canadian experiences. *Journal of Contemporary Water Research & Education*, *135*, 51-55.
Molle, F., Mollinga, P., & Wester, P. (2009). Hydraulic bureaucracies and the hydraulic mission: flows of water, flows of power. *Water Alternatives*, *2*(3), 328-349.
Moss, F. E. (1967). *The water crisis.* New York: Praeger.
Moss, M. E. (1979). Space, time, and the third dimension (model error). *Water Resources Research*, *15*(6), 1797-1800.
Nace, R. L. (1967). Water resources: a global problem with local roots. *Environmental Science and Technology*, *1*(7), 550-560.
Nace, R. L. (1969). *Water and man; a world view.* Paris: Unesco.
National Research Council, (1992). *Water transfers in the west: efficiency, equity, and the environment.* Washington DC: National Academy Press.
Odum, H. T. (1971). *Environment, power, and society.* New York: Wiley-Interscience.
Ohlsson, L. (2000). Water conflicts and social resource scarcity. *Physics and Chemistry of the Earth: Part B*, *25*, 213-220.
Orlove, B., & Caton, S. (2010). Water sustainability: anthropological approaches and prospects. *Annual Review of Anthropology*, *39*, 401-415.
Pearce, W. (1891). Letter to A.M. Burgess, January 7. *William Pearce Papers, University of Alberta Archives*, *9/2/7/2/6*, 1-14.
Peirce, C.S. (1955). *Philosophical writings of Peirce.* New York: Dover Publications, Inc.
Percy, D. (1977). Water rights in Alberta. *Alberta Law Review*, *15*, 142-165.
Percy, D. (1996). Seventy-five years of Alberta water law: maturity, demise & rebirth. *Alberta Law Review*, *35*, 221-241.
Percy, D. (2005). Responding to water scarcity in western Canada. *Texas Laaw Review*, *83*, 2091-2107.
Phare, M. S. (2009). *Denying the source: the crisis of First Nations water rights.* Surrey: Rocky Mountain Books.
Pinchot, G. (1998). *Breaking new ground.* Washington, DC: Island Press.
Polanyi, K. (2001). *The great transformation: the political and economic origins of our time.* Boston: Beacon Press.
Powell, J. W. (2009). *Truth and error; or, The science of intellection.* Chicago: The Open Court Publishing Company.
Pradhan, R., & Meinzen-Dick, R. (2003). Which rights are right? Water rights, culture, and underlying values. *Water Nepal*, *9/19*(1/2), 37-61.
Priscoli, J. D. (2004). What is public participation in water resources management and why is it important? *Water International*, *29*(2), 221-227.
Rawls, J. (2005). *Political liberalism* (Expanded edition ed.). New York: Columbia University Press.
Reisner, M. (1986). *Cadillac desert: the American west and its disappearing water.* New York: Viking.
Rijsberman, F. R. (2006). Water scarcity: fact or fiction? *Agricultural Water Management*, *80*, 5-22.

Rose, N. (1996). The death of the social? Re-figuring the territory of government. *Economy and Society*, *25*(3), 327-356.

Roth, P. A. (2002). Ways of pastmaking. *History of the Human Sciences*, *15*, 125-143.

Sabatier, P. A., Focht, W., Lubell, M., Trachtenberg, Z., Vedlitz, A., & Matlock, M. (Eds.). (2005). *Swimming upstream: collaborative approaches to watershed management.* Cambridge, Mass.: The MIT Press.

Sadler, B. (Ed.). (1983). *Water policy for western Canada: the issues of the eighties: proceedings of the second annual National Resrouce Conference, September 9-12, the Banff Centre, Banff, Alberta.* Calgary: University of Calgary Press.

Sagoff, M. (2004). *Price, principle, and the environment.* New York: Cambridge University Press.

Sauchyn, D., Stroich, J., & Beriault, A. (2003). A paleoclimatic context for the drought of 1999-2001 in the northern Great Plains of North America. *The Geographic Journal*, *169*(2), 158-167.

Sax, J. L. (1994). Understanding transfers: community rights and the privatization of water. *West-Northwest Journal of Environmental Law and Policy*, *1*, 13-16.

Schindler, D., & Donahue, W. (2006). An impending water crisis in Canada's western prairie provinces. *Proceedings of the National Academy of Sciences*, *103*(19), 7210-7216.

Schmidt, J. J., & Shrubsole, D. (forthcoming). Modern water ethics: implications for shared governance. *Environmental Values*.

Schorr, D. (2005). Appropriation as agrarianism: distributive justice in the creation of property rights. *Ecology Law Quarterly*, *32*(1), 3-71.

Shiklomanov, I., & Rodda, J. (Eds.). (2003). *World water resources at the beginning of the twenty-first century.* Cambridge: Cambridge University Press.

Sneddon, C., & Fox, C. (2011). The cold war, the US Bureau of Reclamation, and the technopolitics of river basin development, 1950-1970. *Political Geography*, *30*(7), 450-460.

Strang, V. (2004). *The meaning of water.* New York: Berg.

Sultana, F., & Loftus, A. (2012). *The right to water: politics, governance and social struggles*. London: Routledge.

Swyngedouw, E. (1999). Modernity and hybridity: nature, *regeneracionismo*, and the production of the Spanish waterscape, 1890-1930. *Annals of the American Association of Geographers*, *89*(3), 443-465.

Swyngedouw, E. (2004). *Social power and the urbanization of water.* New York: Oxford University Press.

Tarlock, D. (2008). Water security, fear mitigation and international water law. *Hamline Law Review*, *31*, 703-728.

Tarlock, D., & Wouters, P. (2010). Reframing the water security dialogue. *Water Law*, *20*, 53-60.

Taylor, C. (2004). *Modern social imaginaries.* Durham: Duke University Press.

Taylor, L. (1996). Government bills and orders: second reading, Bill 41, Water Act. *Alberta Hansard,* 2154-2166.

Tuan, Y.-F. (1968). *The hydrologic cycle and the wisdom of God: a theme in geoteleology.* Toronto: University of Toronto Press.

Tully, J. (1995). *Strange multiplicity: constitutionalism in an age of diversity.* Cambridge: Cambridge University Press.

Tully, J. (2008). *Public philosophy in a new key* (1-2). Cambridge: Cambridge University Press.

UNDP, (2006). Beyond Scarcity: power, poverty and the global water crisis. In (p. 440). New York: United Nations Development Programme.

Hydrology, U. S. F. C. f. S. a. T. A. H. P. o. (1962). *Scientific Hydrology.* Washington, DC: US Government Printing Office.

Vörösmarty, C., Lettenmaier, D., Lévqêue, C., Meybeck, M., Pahl-Wostl, C., Alcamo, J. et al. (2004). Humans transforming the global water system. *EOS*, *85*, 513-516.

Wallerstein, I. (2004). *World-systems analysis: an introduction.* Durham: Duke University Press.

Walters, C. (1986). *Adaptive management of renewable resources.* New York: Macmillan.

Warner, J., Wester, P., & Boldin, A. (2008). Going with the flow: river basins as the natural units for water management? *Water Policy*, *10*, 121-138.

Westcoat, J. L. (2000). "Watersheds" in regional planning. In R. Fishman (Ed.), *The American planning tradition: culture and policy* (pp. 147-172). Washington DC: Wilson Center Press Books.

White, G. F. (1969). *Strategies of American water management.* Ann Arbor: University of Michigan Press.

Whiteley, J. M., Ingram, H., & Perry, R. W. (Eds.). (2008). *Water, place & equity.* Cambridge, Mass.: The MIT Press.

Wiener, A. (1972). *The role of water in development: an analysis of principles of comprehensive planning.* New York: McGraw-Hill Book Company.

Wolf, A. T. (2008). Healing the Enlightenment rift: rationality, spirituality and shared waters. *Journal of International Affairs*, *61*(2), 51-73.

Wolfe, S., & Brooks, D. B. (2003). Water scarcity: an alternative view and its implications for policy and capacity building. *Natural Resources Fourm*, *27*, 99-107.

Wood, S., Tanner, G., & Richardson, B. (2010). What ever happened to Canadian environmental law? *Ecology Law Quarterly*, *37*, 981-1040.

World Economic Forum (2011). *Water security: the water-food-energy-climate nexus.* Washington, DC: Island Press.

World Water Council (2000) *A water secure world: vision for water, life and the environment*. Paper presented at the World Water Vision: Commission Report.

⑤

THE ETHIC OF TRANSITION:

EVIDENCE FROM MULTI-LEVEL WATER GOVERNANCE IN ALBERTA

5.1 Introduction

In 2003, the Canadian province of Alberta adopted a new provincial water strategy entitled *Water for Life: Alberta's Strategy for Sustainability* (Alberta Environment, 2003a). The impetus for the new strategy came from shifting biophysical and social circumstances, and a growing appreciation of the need to cultivate new norms for water stewardship. Biophysically, concerns over persistent, multi-year droughts are increasing, particularly in response to paleoclimatic studies revealing the 20th century as abnormally wet (Sauchyn et al., 2003; Laird et al., 2003). This was exacerbated by a 2001 drought, when southern Alberta's predominantly supply-side solutions to water challenges led, for the first time ever, to total water available being exceeded by the total licensed withdrawals allowed under the province's water allocation system (Alberta Environment, 2005). Climate forecasts suggest increasing temperatures will raise evapotranspiration demands (Schindler and Donahue, 2006) and create regime shifts in precipitation that further reduce surface water availability (Shepherd et al., 2010).

In the northern regions, Alberta's large oil and natural gas extraction industry are the major source of surface water quality degradation (Kelly et al., 2009, 2010) while the large loss of peatland due to Oil Sands mining changes surface hydrology while releasing stored carbon that is unaccounted for in emissions calculations (Rooney et al., 2012).

New mining technologies that reduce freshwater use are super-heating steam to force bitumen from the sandy soil and, while these do not disturb the terrestrial ecology to the same extent as open mining, do create the potential for groundwater contamination (Ko and Donahue, 2011). Coupled with these biophysical challenges are continued struggles for Alberta's indigenous people (known in Canada as First Nations) for recognition of water rights that remain unclearly articulated (Bartlett, 1986) and which were not historically, and have yet to be, formally recognized (Phare, 2009). These concerns operate alongside the burgeoning urban centers growing to meet the demands of Alberta's industrial economy and which must also attend to the need to reduce water use to achieve sustainability (Chen et al., 2006).

Against this backdrop, *Water for Life* has been interpreted by Alberta as facilitating both a transition towards multi-level governance for watershed planning and as a policy window creating the possibility for a new water ethic (Alberta Environment, 2003a; Alberta Water Council, 2007). This paper applies a modified version of content analysis to identify how the new water ethic for Alberta was shaped through the public discourse that informed *Water for Life.* Then, through semi-structured interviews at both the provincial and regional scale, it considers the extent to which the ethic articulated at the provincial level affects watershed planning. The analysis of policy discourse, when coupled with qualitative research regarding implementation, offers an assessment of both the reach of Alberta's new water ethic and its efficacy for addressing the challenge of transitioning to sustainability.

The paper is structured into two parts. The first provides a review of the literature on transition management, a field that emphasizes the strategies, tactics and operations that enable socio-technical systems to transition towards sustainability through multi-level governance. It is frequently noted in the literature that politics and ethics play an important but under-researched role in sustainability transitions (i.e. Meadowcroft, 2011; Loorbach, 2010). In these respects, this study seeks to contribute to understanding how the two are intertwined and interactive. In particular, the literature review positions transition theory against the growing discourse on water ethics and arguments that suggest understanding *existing* social and technological norms is critical for improved water management. In this, the water ethics literature begins by drawing attention to prevailing values and the role they play in legitimating existing water norms that, in turn, facilitate or constrain transitions to sustainability.

The second part of the paper situates Alberta's pursuit of a new water ethic. It considers the provincial discourse regarding the water ethic in Alberta's *Water for Life* strategy through a modified content analysis of policy documents from 2001-2008 (the period in which the strategy was developed and implemented). The content analysis is followed by interviews regarding how the *Water for Life* strategy has impacted Alberta's shift towards multi-level watershed governance. The paper argues that the claim that Alberta's *Water for Life* strategy creates the possibility of a "new ethic" is, on closer inspection, more of a claim regarding how an 'ethic of transition' may serve to shift current governance norms towards versions of sustainability that fit with a narrative that preserves state legitimacy. These new norms are not a set of moral principles for

adjudicating decisions. They are, rather, socio-technical norms that effect place-specific transitions under new forms of multi-level governance. In this sense, the 'ethic of transition' uses normative claims to introduce new spaces for governance. In so doing, and as is detailed below, these new governance spaces trade on the particular narrative given of Alberta's water policy heritage and the socio-technical system being addressed. As such, the 'ethic of transition' is an important site of political and moral contest regarding Alberta's policy narrative itself.

5.2 Transition management and water ethics

From the perspective of transition management, efforts towards sustainability require shifting from top-down, 'command and control' environmental management toward multi-level governance that encourages 'policy windows' that open out upon increasingly diverse set of values and possibilities (Olsson *et al.*, 2006; Holling and Meffe, 1996). To encourage an understanding of these opportunities, transition management groups multiple levels of governance into three types—strategic, tactical, operational—that interact based on respective (though not isolated) tasks of setting the vision, agenda and experimental goals of governance (Kemp *et al.*, 2007). Transition management's sensitivity to the cross-scalar and non-linear dynamics of complex systems, and its understanding of governance as itself a socio-technical system, is designed to link it with a more general account of complex systems (van der Brugge and van Raak, 2007; Rotmans and Loorbach, 2009). As Kay (2000) has argued, the challenge of linking science to policy *within* a view of complex systems is that knowledge is linked

to policy through narratives that explain our positioned and partial understandings of complexity, which is also acknowledged in the literature on resource management and the idea that decision makers are often confronted with 'meta-problems' that extend beyond the capacity of particular perspectives (see also, Mitchell, 2002; Gunderson and Holling, 2002; O'Riordan, 1971). In this light, and as Voß and Bornemann (2011) and Smith and Stirling (2010) suggest, understanding how new possibilities emerge within 'policy windows' requires attending to how existing socio-technical systems narrate both the socio-technical system itself and resource management problems.

Narrating 'policy windows' in transition management requires re-orienting social values and ethical norms toward a long-term political vision of sustainability (Loorbach, 2010). This task of setting the strategy, or vision, also has a historical counterpart that shifts explanations of extant socio-technical systems from those of 'co-production' to 'co-evolution' in order to explain governance paths in terms of both competition and cooperation (Rotmans and Loorbach 2009). In water management, however, a significant obstacle for understanding co-evolutionary transitions is the highly interconnected nature of water management across social, ecological and technical systems (Pahl-Wostl, 2007). As Delli Priscoli (2000) argues, historical accounts of 'co-evolution' must be tempered by sensibilities that do not collapse historical understandings into modern categories—such as those dividing humans from nature (see also Folke, 2003). This cautionary note regarding the shift to 'co-evolutionary' accounts arises because there are often competing and equally legitimate ways to narrate resource problems. That is, the problems are ambiguous (Brugnach et al., 2011). Further, competing accounts of the narrative of socio-

technical systems or their respective influence in definitions of contemporary resource management problems may be incommensurable (Espelund, 1998). The increasing attention being given to ambiguity in resource management suggests that the manner in which historical and contemporary knowledge is recognized and produced is central to effectively cultivating partnerships with shared visions of the future (Ingram and Brugnach, forthcoming). In the Sante Fe watershed in New Mexico, for example, there are multiple and overlapping social, technical, and managerial norms and practices that have evolved through indigenous agriculture, Spanish colonization, and American modernization (Rodriguez, 2006). As I suggest elsewhere (Groenfeldt and Schmidt, forthcoming), one way to organize tensions among different narratives is to explicitly engage with the ethical values they rely on for legitimacy. That is, to first ascertain *existing* and overlapping approaches to water management in order to identify what is at stake in narrating historical water norms in one way, or multiple ways, versus others.

Before examining what the water ethics discourse may offer to the task of transitioning values, it is important to acknowledge the importance of politics in transition management. Hendricks (2008: 342) suggests that the transition management literature has not been "explicitly concerned with 'the political' dimensions of transition processes, and the 'politics' they generate." This distinction between 'the political' and 'politics' is motivated from Chantal Mouffe's work. Mouffe (2005: 9) argues that 'the political' is the antagonistic dimension of human societies that results in contests over power while 'politics' is "the set of practices and institutions through which an order is created, organizing human coexistence in the context of conflictuality provided by the

political." This distinction holds the possibility of linking competition (antagonism) and co-operation regarding how to compete, or agonism, together in transitions while also recognizing genuine and even incommensurable differences (Mouffe, 2000). It also helps in the task of understanding how efforts to achieve sustainability must fit with broader societal goals as multiple agendas compete with considerations of social policy (see Meadowcroft, 2007). Further, the distinctive contribution of an agonistic view is that, as applied to environmental governance, it does not collapse all conflicts back into issues of power alone, and this makes space for recognition of multiple narratives and forms of life in environmental decision making (cf. Tully, 2008). As Hendricks (2008) goes on to argue, it enables a critical appraisal of the long-term visioning processes of management agencies, which is of particular interest because such visions often involve moral judgments on behalf of society yet planning and resource management agencies are often not designed to be democratically representative. As discussed below, the Alberta case reveals tensions between how governance transitions navigate the existing role of civil society, new forms of watershed governance, and the responsibilities of government.

In contrast to Hendricks' work on politics, discussions of ethics remain somewhat obscure in the transition management literature. Here the term 'ethics' follows Parfit (2011), who distinguishes between object-given and subject-given reasons for norms. In the former, reasons are provided "by the facts that make certain outcomes worth producing or preventing, or make certain things worth doing for their own sake" (Parfit, 2011: 45). In the latter, reasoning about moral judgments is based on what in fact we would do given our particular preferences and desires. These views are subjective in the

sense that they depend on reasons *about us.* Part of the challenge of defending an object-given view for transition theory in water management is to address Walker and Shove (2007), who argue that there is an ambivalence about central concepts, such as sustainability, that are both inputs to, and the product of, governance exercises. From their perspective, it is not entirely clear whether terms like 'sustainability' represent an end to be achieved or a process for addressing what in fact we are doing (or would in fact do under alternate arrangements). In water management, however, understanding the role of ethics is increasingly recognized as critical to issues of place, equity and the multiple meanings that emerge from particular positions that actors hold with respect to socio-technical systems, such as natural resources law (Butler, 1986, 2000; West, 2007; Whiteley et al., 2008; Ioris, forthcoming). Since it is these particular norms that are of consequence, an object-given approach is appropriate because the aim of enjoining in normative deliberation is not to reason about what we would do under a particular governance regime but to give normative reasons for why, given *existing* water management norms, an alternate vision is worthy of pursuit.[8]

[8] An analogous argument could be made for 'sustainability' by noting that the ethic underlying sustainable development draws on historically antecedent normative positions (Lumley and Armstrong, 2004; Du Pisani, 2006) that can themselves be given a co-evolutionary explanation (Norgaard, 1988). Hence, ambivalence between the 'ends versus processes' of sustainability can be meaningfully connected to this historical ethic. Further, this ethic plays out in particular places and, hence, sustainability gets moved from 'the political' realm of antagonism towards the 'politics' that organize institutions and actors according to the particular ethos of a given place. That is, instead of trying to unite sustainability to 'the political' we instead work out the politics and ethics *of* sustainability in place-specific cases. But this requires a separate argument that is not the topic here.

An object-given approach to water ethics offers input to transition theory by virtue of the entry point it provides towards existing norms that characterize water as a (supposedly) neutral object in socio-technical systems (Postel, 2008). As Berque (2005) has argued, modern technological approaches that view water as a 'resource' have the effect of detaching it from its place-specific meanings not only for individuals, but for society as well (see also Barbaza, 2012). Budds (2010) has argued this claimed neutrality also extends to the types of rights considered appropriate for governance and this may mask ethical and political difference when water rights transition to support new socio-technical systems, such as markets. Elsewhere (Brown and Schmidt, 2010), I have sought to build on similar notions in a recovery of Aristotle's distinctions between *episteme*, *techne*, and *phronesis*. In this view, modern water management emphasizes scientific knowledge (*episteme*) and technological know-how (*techne*) without always attending to the practical wisdom (*phronesis*) that has accrued through long-standing cultural traditions of water governance and which the findings of complex systems science compel us to acknowledge as a buffer against uncertainty. The need for this type of recovery is echoed by numerous authors who see the technical orientation that now predominates water management as creating a gap between technical understandings and broader social or ecological relationships (i.e. Bakker, 2010; Lemos, 2008; Conca, 2006; Espelund, 1998).

An interesting question here arises regarding what historical norms are available for reconnecting *existing* water norms and the historical categories of 'water resources' that have supported the claimed neutrality of modern water management systems. As

Chapter 2 argued, the declaration that water is a 'resource' was itself both political and ethical. As an assessment of U.S. water planning reveals (Schmidt and Shrubsole, forthcoming), the declaration of water as a 'resource' was part of a broader vision that united water to norms that would support a particular policy perspective (see also Feldman, 1995). In this sense, there was never a sharp divorce of social values and technical systems in water planning and management in the characterization of water as a 'resource'. Such recognition is critical given the international influence of U.S. water norms on state attitudes towards water development and management (Boelens *et al*., 2010; Feldman, 2007; Briscoe, 2010). The task, therefore, is not to reject technical orientations to water management, but to see transitions towards multi-level, shared water governance as an opportunity to explicitly address the *existing* water ethics of particular places and to orient them towards long-term visions that are defended through object-given reasons.

The effort to reconnect the social and the technological in a broader view of how *existing* water ethics have shaped the context of governance transitions has led many authors to critique models of decision making that explain political negotiations through appeals to the subject-given explanations of rational choice theory (i.e. Blatter and Ingram, 2001; Wolf, 2008). Alternately, an object-given approach allows the water ethics literature to link up with the politics of transitions by also rejecting the attempt to render the 'the political' in rational or individualistic terms that would deny the real differences in how water is understood by different groups (cf. Mouffe, 2005). As suggested here, the water ethics discourse holds various prospects for identifying a co-evolution of politics

and ethics in water governance norms while also uniting that heritage with current transitions towards sustainability in water management. What emerges from this perspective might be called an 'ethic of transition' that appeals to *existing* values and water norms in order to shoulder the transition towards alternate formats for governing socio-technical systems. Examining this ethic, I will argue, reveals how values are narrated and may provide both a critique of unsustainable practices and a challenge to how competing narratives are affected by governance transitions.

5.3 Watershed management in Alberta

Transitions to watershed management in Canada have not proceeded under a single model, with multiple approaches emerging from the country's diverse regions, biophysical characteristics, and cultures (Senecal and Madramootoo, 2005). A trend, however, has been towards using the 'watershed' not only as an administrative unit but also as a governance tool (Cohen, 2011). Alongside the rise of watershed management, several provinces and territories have crafted water strategies that outline the vision and governance arrangements that couch contemporary transitions. In two cases, Alberta and the Northwest Territories, provincial water strategies have been developed and implemented with explicit attention to ethics and values. Alberta's case is also explicitly linked to a larger restructuring of water governance, planning and management. As such, it offers an opportunity to consider how ethics and values affect transitions towards forms of multi-level governance.

Methods

This section reports on the Alberta case in two steps. The first uses documents from public participation processes and workshops that led to Alberta's 2003 *Water for Life* strategy to consider how it created the possibility of a new water ethic in the province. This data comes from 2001-2008 and all of the documents are publicly available. In some cases public participation data were either aggregated or reported on representatively, which presents a limitation to the analysis. The second part reports on in-depth, semi-structured interviews (n=25) with two levels of Alberta's new multi-level water governance framework: the provincial Alberta Water Council and regional Watershed Planning and Advisory Councils, or WPACs. Appendix I provides the questions asked of respondents.

Policy documents were analyzed using a modified content analysis. The analysis followed Krippendorff's (2004) argument regarding the abductive nature of content analyses, where interpretation is an exercise of inferring the antecedent (the meaning) from the consequent (the sign). From this perspective, the frequencies of coded materials summarize the qualitative inferences used to create categories for classification. By contrast, this study does not use frequency counts. Rather, it worked back from the claim regarding the possibility of a new 'water ethic' claimed for Alberta to see how the discursive and institutional changes to Alberta's policy narrative were effected. This genealogical approach seeks a co-evolutionary explanation of policy discourse alongside operational changes to governance contexts. The study does not, therefore, test a

hypothesis or compare Alberta's 'water ethic' against other normative theories. Rather, it seeks to make inferences to the best explanation regarding why governance practitioners interpreted Alberta's *Water for Life* strategy as creating new ethical possibilities. In so doing it attempts to reduce ambiguity regarding the policy process by examining how certain terms, concepts and relations are marshaled for various ends and at different scales (Rydin, 2005). Likewise, and as is evident below, interview data was analyzed with a view to understanding how the water ethic of *Water for Life* affected the transition to new forms of multi-level watershed governance at both the provincial and watershed scale.

Methodologically, three caveats are in order. First, the analysis considers how policy processes affect multi-level watershed governance, but does not extend to management outcomes (see Pentney and Ohrn, 2008). Second, the account is purposefully restrained to the narrative used in Alberta's water policy reforms. This is done in order to show how that specific narrative creates internal political and ethical challenges in transitions to sustainability. This implicates a third caveat, which is that the distinction between 'the political' and 'politics' is deployed to consider the positioned and place-specific interactions regarding governance transitions rather than to analyze those transitions against broader power configurations. The analysis does not ignore power relations, but it does leave discussion of 'the political' for subsequent work.

Alberta's water policy context

Alberta is a land-locked province in western Canada. It has faced perennial water challenges since its semi-arid regions were targeted for western settlement in the late 19th century. At that time, the extirpation of indigenous peoples from their traditional lands to treaty reservations was coupled with the creation of a bureaucratic system for administering licenses to water on a 'first in time – first in right' basis (Matsui, 2009; Percy, 1977). This system of prior appropriation was legalized in the 1894 *North-west Irrigation Act*, the title of which reflects the predominantly agricultural aims of western settlement. Alberta became a province in 1905 and received constitutional control over natural resources in 1930. In 1931 it passed the *Water Resources Act*, which effectively carried over existing water law. Throughout the development of water for irrigation and urban development in the 20th century, two problems arose with Alberta's water allocation system (Percy, 1986): The first was that water licenses had been granted without expiration dates in order to provide tenure security to incoming settlers. The second was that there was no mechanism to transfer existing licenses to new areas of demand; each license was made appurtenant to specific parcels of land and the particular conditions of use identified in the application for a license. In the main, these problems were handled through two techniques. The first was through patchwork amendments to water regulations (Percy, 1996). The second was through increases to water supply (Armstrong et al., 2009).

Throughout the 20th century Alberta held a tenuous relationship with the federal government regarding authority over water infrastructure, particularly the dams and conveyance structures constructed for irrigation and hydropower (Marchildon, 2009). In

the early 1970s, Alberta was granted full control over water development, and by the early 1980s the southern regions of the province provided for the majority of irrigated acreage in Canada (AIPA, 2002). During the 1980s and early 1990s, southern Alberta witnessed a large conflict over water development paths built primarily on increased water supply and regulatory piecework. In particular, the construction of the Oldman Dam became a site of contest not only for recognized problems within Alberta's water law regime, but also for ecological concerns and First Nation's rights (Glenn, 1999). During the 1990s, and partially in response to large public protests regarding the Oldman Dam (see Glenn, 1999), Alberta initiated a number of public participation exercises that eventually informed a new water law for the province, the 1996 *Water Act*. The *Water Act* came in to force in 1999 and created the possibility for watershed governance in Alberta by allowing for the creation of regional watershed management plans and the creation of a provincial water strategy. Shortly after, in 2001, public consultations began for what became *Water for Life: Alberta's strategy for sustainability*, which was adopted in 2003.

Water for Life

A single consulting firm, Equus Consulting, reported directly to the Minister of the Environment on the consultation processes that led to the *Water for Life* strategy. The process began with an 'Ideas Group' of invited stakeholders who met in 2001 to scope the challenges and opportunities for a provincial water strategy in Alberta. The Ideas Group (McMillan, 2001: 2) remarked specifically on the need for systems thinking since

"[r]esults are affected by feedback in the system (i.e. people learn about other options and try to use them; people adapt more efficiently if they learn about changes in the system as people respond to the options available)." According to the Ideas Group, the objectives of *Water for Life* should be to link four concerns in a non-hierarchical strategy: the environment, human water uses, knowledge, and a sustainable economy. Further, "[t]he Ideas Group imagined a possible world in which water management is largely undertaken through an open management system..." and which would change the role of government from manager to one of "setting the rules" (McMillan, 2001: 5).

The early identification of a systems approach to sustainability and a shift from 'government to governance' set *Water for Life* in the types of multi-level governance transitions theorized by transition management. The next steps of the process took place at two levels. The first was a six-week process of public consultations (McMillan, 2002a). The consultation process used 15 community workshops (n=1000), a random telephone survey (n=1000), and workbooks questionnaires (n=2100). The second step was a Minister's Forum on Water held June 6-7, 2002, one month after the public consultation reports had been filed (May 10, 2002). In the Ministerial Forum, members were divided into seven working teams to address: "water conservation, water quality, drinking water, aquatic ecosystems, water supply, water and its role in the economy, or governance" (McMillan, 2002b: 1).

At the Minister's Forum, the water conservation team articulated the first connection of water to ethics by noting that, "the provincial government must challenge

Albertans and user sectors to establish and implement a water conservation ethic, target and actions as one element of a sustainable water strategy" (McMillan, 2002b: 11). Further, the Ministerial Forum reported that Alberta's new water management system must be focused on water basins, or watersheds, as a unit (McMillan, 2002b). To this end, the Ministerial Forum suggested a four-fold governance structure comprised of: a Provincial Authority integrated with the government, a Provincial Advisory Group that would recommend policies but have "no power over implementation," a set of Water Basin Councils that would also function in an advisory role and, finally, Water Basin Authorities that would be "empowered to make decisions and oversee implementation of water management" (McMillan, 2002b: 21).

In March 2003, Alberta circulated its draft *Water for Life* strategy (Alberta Environment, 2003b), with two months allotted for public input. The draft strategy carried over the four pillars of the Ideas Group—healthy aquatic ecosystems, safe drinking water, a sustainable economy and knowledge. It also promoted a shift towards shared governance and the adoption of a watershed approach to multi-level governance. However, the governance structure was not that suggested by the Ministerial Forum. The source of the new format is not stated, but it keeps all regulatory authority in the government, principally the Ministry of Environment, with a provincial advisory board and watershed planning and advisory councils providing recommendations to the Ministry. Finally, the actual water management activities are not discharged or monitored through watershed Authorities, as initially suggested, but rather through "Community-based watershed protection groups" constituted by "volunteers" and who have no

regulatory empowerment. Verification of the draft was published in July 2003, at which time First Nations groups supported the *idea* of the move to watershed governance but did not see how the strategy formed the basis for a true partnership with the province (McMillan, 2003).

The final version of *Water for Life* was published in November 2003. The strategy maintained the non-regulatory nature of all new governance partnerships at the provincial, watershed, and local level while also trimming the four pillars of the strategy to three by excluding "knowledge, " which the Ideas Group had defined as what is "…needed to make wise choices about water" (McMillan, 2001: 2). The remaining pillars—aquatic ecosystem health, safe and secure drinking water, and a sustainable economy—were explained as buttressing Alberta's transition away from an era in which water was "relatively abundant" to a new era in which "population growth, droughts and agricultural and industrial development are increasing demand and pressure on the province's water supplies, and the risk to the health and well-being of Albertans, our economy and our aquatic ecosystems" (Alberta Environment, 2003a: 5).

Since *Water for Life* was adopted, the Alberta Water Council has been charged with assessing and renewing the strategy's key foci and aims. The council itself was initially envisioned as an expert panel, but as its 24-member constituency has evolved, it is now seen more as a window into provincial-level stakeholder concerns (personal interview 1). The Water Council has highlighted the role of ethics at the strategic level in Alberta's new governance framework in the 'renewal' documents that assess and provide

on-going feedback and direction to *Water for Life*. These renewals set the agenda and normative goals for achieving sustainability and increasingly attempt to bridge the political nature of different stakeholder orientations through appeals to ethical values. For instance, in 2007 the renewal of *Water for Life* states (Alberta Water Council, 2007: 1, 27, 28):

> • "The Alberta Water Council believes the *Water for Life* strategy creates the possibility for a new water ethic in Alberta—one based on conservation, sound science and shared responsibility for watershed management planning."
>
> • "We believe that broad stakeholder involvement and a strong resolve to evolve from a consumption to a conservation ethic are necessary."
>
> • "The Alberta Water Council believes that, in the long term, the wise use of water, through effective management of demand, is a critical component in the development of a true conservation ethic in the province."

These articulations of a new water ethic turn variously on both arresting existing patterns of water management (i.e. consumption and supply-side management) and on uniting new practices in informal networks of decision making that combine conservation, sound science and shared governance. More recently, the Alberta Water Council (2008a: 15) stated that a key direction for Alberta was that: "All sectors understand how their behaviours impact water quality, quantity and the health of aquatic ecosystems, adopt a 'water conservation ethic' and take action." Alongside these calls for a new ethic has been a strong push towards using the existing networks in the province to establish a more robust governance framework even without *Water for Life* being a formal regulatory tool (Alberta Water Council, 2008b).

The Water Council's emphasis on "conservation," "sound science," and "shared governance" provide the key dimensions along which Alberta's new water ethic has been linked to its new multi-level governance model. In terms of conservation, phrases like 'wise use' or 'wise choices' are used in all of the policy documents analyzed from 2001-2008. In context, "wise use" is marshaled to mean various things but most often to link Alberta's water policy to the knowledge needed to balance current demands against future considerations. For instance, the Ideas Group used the notion of "wise use" to connect conservation to ethics, and also to the very idea of watershed management and public values. The phrase is used in the final strategy as committing the Alberta Government, "to the wise management of Alberta's water quantity and quality for the benefit of Albertans now and in the future" as well as to a broader notion that "citizens, communities, industries and governments all share responsibility for the wise use and sustainability of their watersheds" (Alberta Environment, 2003a). In the renewal of *Water for Life,* it is also used to guide reform of Alberta's prior appropriation water allocation system (Alberta Water Council, 2008a).

In addition to linking previous institutions to new and future governance arrangements through wise use, Alberta's water ethic is also characterized by a changing perspective towards scientific knowledge. Although knowledge did not become a pillar of *Water for Life*, the recommendation of the Ideas Group that watershed management begin with 'state of the basin' reports has become the first task of newly formed water planning and advisory councils (WPACs). The provincial strategy stresses the need for such knowledge due to the changing water context in Alberta from one of 'relative

abundance,' to an unpredictability of supply due to climate variability, changing land uses and their effects on water quality and new technologies (Alberta Environment, 2003a).

Prior to the finalized version of strategy, the content analysis did not identify recognition of complexity as a governance issue. Soon after, however, the difficulty of assessing and monitoring diverse types of water data is identified (Alberta Water Council, 2007). The recognition of the complexity of integrating science recurs in all subsequent policy documents regarding both *Water for Life* and the shift towards shared governance. The shift towards shared, multi-level governance in Alberta builds on the growing recognition of complexity in developing Alberta's 'wise use' ethos and, more generally, in implementing *Water for Life*. The first link of complexity to shared governance is made by the Alberta Water Council's (2005: 15) claim that,

> "[w]atershed management is a complex activity requiring the expertise and efforts of many. Partnerships at the local, watershed, and provincial level will provide the forums necessary to share knowledge, discuss solutions, and inform decision makers of the best course of action for effective watershed management."

Subsequently, in 2008, the Alberta Water Council (2008b) began an analysis of the "policy gap" that arose as the "number and sophistication of *Water for Life* partnerships has increased, and an already-complex system of multiple stakeholders operating in a multi-jurisdictional environment has become more complicated." Thus, the growing recognition of complexity can be seen in tandem with how multiple stakeholders at various scales began to trouble a single model of partnership.

One explanation for the emphasis placed on conservation (i.e. wise use), sound science, and partnerships in the transition to watershed management in Alberta is that, despite the creation of multi-level governance structures, authority and responsibility for water management decisions remains with the government. This informal regime implies that the influence on policy from 'advisory councils' turns on generating normative legitimacy such that management decisions take on the advice of governance partners both because they present convincing and cogent arguments and because the discursive space in which they operate is itself free from having any clear claim to regulatory power. Following Mouffe (2005), the claim here is that 'the political'—the sphere of power to make decisions under conditions of conflict—is disconnected from the 'politics' and the ordering of institutions that operate within that larger discursive space. This is not to deny that how multi-level governance has been structured is not an issue of power or 'the political'. Rather, it is to maintain this study's focus on how, *within* a particular governance structure, the politics of transitioning towards sustainability is sought through the cultivation of an ethic that connects narrative claims regarding previous and future regulations (i.e. wise use), to contemporary challenges (i.e. sound science) while articulating a vision of the future (i.e. watershed management based on multi-level governance partnerships). In this, Alberta's *Water for Life* strategy *internalizes* the broader power regimes of 'the political' and, in effect, articulates a water ethic commensurate with the policy narrative recognized by the state.

Multi-level watershed governance in Alberta

As Olsson et al. (2006) argue, 'shadow networks' are key to enabling successful transitions to multi-level governance. This has also been the case in Alberta. Prior to the creation of Alberta's eleven watershed planning and advisory committees (WPACs), there were, in several watersheds, existing watershed alliances, river-keeping groups or other coalitions advocating for the protection and stewardship of water. Many of these organizations had been formed in the 1990s in response to the controversies and concerns over water management practices affecting both water quality and quantity (personal interview 2). In many cases, these existing networks were targeted as the primary group for forming the WPAC in a particular watershed. In fact, the Bow River Council in southern Alberta formed the very model for WPACs (personal interview 2, 3). As such, these different networks brought different institutional histories, along with existing projects and concerns, to the transition to shared water governance. This section reports on in-depth, semi-structured interviews with individuals involved with both WPACs and the Alberta Water Council. Due to the small nature of Alberta's water governance community, respondents are not identified, even in terms of their affiliations. The analysis considers governance dimensions of Alberta's new water ethic in terms the discourse on conservation, science, and partnerships.

Conservation

The ability to link a sense of Alberta's water policy history to contemporary problems and future challenges characterizes the discursive notion of conservation and 'wise use' in its *Water for Life* strategy. On the ground, the challenge of balancing out

these considerations is contextualized by an appreciation of existing water use practices, public perceptions, and the potential for new ways of organizing at the watershed level. In this sense, there are clear constraints on the achievement of conservation at the watershed level. Interviewees reflected on this in two ways.

First, balancing present interests and future concerns was motivated out of ambivalence towards uncertainty tempered by a sense of local goodwill. As one participant put it, something "inherently exists" that brings people to involve themselves in WPAC initiatives. These people come "…with an inherent characteristic of wanting to see some change but not carrying a shotgun" (personal interview 4). But others noted, correctly, that many participants at both the WPAC level and with the Alberta Water Council are paid to participate by the government or other employers as representative of specific stakeholder perspectives. Participants revealed that a combination of local wherewithal, new technological understandings, and shifts in attitude were key to achieving watershed sustainability:

> • "The WPAC, or from the basin perspective, most of the people, not all of them, but the majority of the people that participate on the WPACs, are from rural Alberta…Dealing with variability in the weather is nothing new to them. If anybody's going to survive it, its going to be these guys…their attitude is, 'we've dealt with this before, we can deal with it going forward'" (personal interview 5)
>
> • "So, what is that adaptive capacity? How much is that related culturally, socially, economically?...We can actually start showing [the public] that, showing them the benefits, having them understand if they don't already understand stewardship and the caring practices employed on the landscape—the land management versus land use—what can be done. What are these tools? Bringing it all together in an integrated, hopefully geospatial system and help them make some of those decisions." (personal interview 6)

> • "So it's a concern about how we will manage to move from where we are now, which is still thinking of water as pretty abundant and using it pretty abundantly, to thinking about living within our means in a watershed." (personal interview 7)

Second, on the specific topic of conservation, and how it fits with transitioning under conditions of uncertainty, several respondents suggested that there was an appetite for more work on conservation and that talk of 'climate uncertainty' was needed but that, at the same time, it could be unhelpful, even a non-starter, for motivating changes because too little was known.

> • "We get questions about climate change and so on. And we, more or less, don't really know what to do there…If somebody can tell you that the river flow was going to be down by 20% in 20 years, 40% in 40 years, then you could do something for it." (Personal interview 8).

What was more salient for addressing uncertainty regarding water conservation was the institutional uncertainty that came from not knowing how WPACs, or *Water for Life* in general, fit with broader resource management planning exercises. In particular, Alberta's new "Land-Use Framework" divides the province into nine regions that are not based on watershed boundaries for the purposes of planning. Many respondents were unsure what role, if any, WPACs or watershed management would have in this broader context, particularly because of the informality of water governance and the regulatory authority given to land management exercises. In this sense, uncertainty about the socio-technical system, and the social world it was a part of, was critical to how respondents understood the aims of water conservation in a broader governance framework.

Science

The first task of all WPACs is to conduct a 'state of the basin' report for their watershed. In regions where civil society groups existed, this process could be undertaken fairly quickly, and in some cases was already underway in certain respects. Typically, the task of drafting the report was contracted out to consultants, with respondents noting that on-going use of the same consultants produced certain biases, "When you're a hammer, every problem looks like a nail—so when you're an oil and gas, a strong oil and gas consultant, you tend to go to what you know" (personal interview 9). Nevertheless, "most members defer to the technical experts as to what was needed to really show the health of the watershed" (personal interview 10). More generally, however, interviewees across the province remarked on challenges regarding the data needed to ground 'state of the basin' reports in science while trying to ascertain current trends with existing data:

> • "I mean, some data exists, but what you really need are 20 parallel river systems, in which you manipulate them in various ways by manipulating flow and seeing what the environmental impacts are. Well, that simply can't be done. So we need to get at important things in other ways. (personal interview 11)
>
> • "We know what we're testing for, but when we started dredging up the info on what's in the water, lots of these studies are back from the '50s, and that's all the data we've got to go with. So we don't have a baseline for the health of the watershed anyway. We've got a hodgepodge of useless information." (personal interview 12)
>
> • "With the suite of indicators that we actually require to actually do an assessment of the condition, we need 33 indicators looked at across all sub-watersheds. And at this point we have data for 11 of them, and of those 11 only 4 can we actually do comparative work across all sub-watersheds." (personal interview 3).

As one interview respondent noted, 'state of the basin' reports are, in effect, reports on the current state of knowledge about the watershed, not the 'snapshot' of the basin that they are designed to be. When asked whether the *Water for Life* strategy provides a

framework in which to orient advisory decisions under these conditions, participants had high degrees of variation. Typically, however, those involved with WPACs that were newly formed emphasized the important role of the strategy in guiding the long-term aims and ends of watershed planning. On the other hand, those involved with WPACs that existed previously identified the *Water for Life* strategy as important, but as either already internalized in the minds or 'collective wisdom' of many participants or else too vague to be of concrete use in the specific challenges faced.

Partnerships

The role of partnerships in the transition to shared governance was the most contentious issue of Alberta's new water ethic. And this is where politics again enters the transition towards sustainability through multi-level watershed governance. As mentioned above, several civil society groups had formed in Alberta during the 1990s as river-keeping groups or watershed alliances. These groups had formed networks and partnerships with municipalities, fish and game organizations, NGOs, ENGOs, forestry and agricultural groups. In many cases, they had advocated for considerations of water quality or quantity that were not being adequately addressed. In this context, the *Water for Life* strategy took these existing institutions, or 'shadow networks,' as the model for Alberta's WPAC management system. As such, the transition of these networks into new governance constellations created tensions because it was not a single organization that was transitioning, but an entire network of relationships. In some cases certain *existing* partners backed out, or reduced their funding contributions, due to the increased role of

the province. Of particular interest, in this case, is that the model for shared governance promoted by the Alberta Water Council (2008) does not recognize this institutional context, stating that how partnership models should function had previously "existed only on paper."

One of the critical issues identified by existing, versus newly created WPACs, was the manner in which they were funded. At first, funds were provided in the form of grants. But, more recently, they have shifted to a contract basis. As interviewees put it,

> • "…we are resistant to that because contracts have confidentiality agreements, and so on and so forth. And we don't want our hands tied like that. If we detect a problem in the watershed, we want to talk about that problem in the watershed, and we don't want any kind of political pressure on us pressure on us to say, 'Oh, we just want to hush that up right now,' or 'We're not ready to talk about that.' Unfortunately, those political things can happen, and we don't want any part of that type of thing." (Personal interview 11)
>
> • "I think that the percentage of funding we get from the province really, really drives what we do…we should be thinking about being independent because in some sense if we're just a contract deliverer for the province, that's not a tremendous reason for existing" (Personal Interview 8).

Concerns over the funding model were not limited to *existing* networks, but were also of concern for the creation of new partnerships. In particular, a challenge across Alberta at both the watershed scale and on the Alberta Water Council was the participation of First Nation's communities. Numerous respondents suggested lack of participation could be due to the legal status of First Nations with respect to the Alberta government (First Nations negotiations in Canada fall, constitutionally, under federal jurisdiction), issues of capacity, or issues of trust. Others, however, identified the contractual basis of WPAC funding as a primary barrier for First Nations participation

because it would make Traditional Ecological Knowledge the intellectual property of the government.

> • "The Government of Alberta contracts – they provide us with funding – state that all of the input that comes through that funding, and that project, becomes the property of the Government of Alberta and with Traditional Ecological Knowledge that becomes a bit of a problem for us, so we really couldn't take that funding" (personal interview 3).

The particular challenge of funding the types of partnerships envisioned in Alberta's multi-level governance model was not the only challenge in the implementation of its new water ethic. Another involved the coordination of the multi-level governance system itself. In this sense, the informal governance regime was created without clear linkages between multiple scales of governance at the provincial, watershed, or community level. This reflects the non-hierarchical systems model of the Ideas Group for *Water for Life*. At the same time, participants in the study noted that, although there is a growing sense of partnership across WPACs, facilitated by 'WPAC summits,' that apart from a stakeholder seat on the Alberta Water Council there is no formal exchange of information.

5.4 Discussion

The development of Alberta's *Water for life* strategy for sustainability created the possibility of a new water ethic for the province alongside transitions towards multi-level governance. In this, it has many of the features that characterize the literature on transition management, such as the creation of governance structures at the strategic, tactical and operational level and which are reflected by the Alberta Water Council, Watershed Planning and Advisory Councils and Community Stewardship Groups. As the

literature on water ethics suggests, the local and place-specific challenges of improving water management are not easily parsed from the existing values and norms of particular places. In Alberta, an 'ethic of transition' emerges alongside the emphasis of provincial discourse on the need for conservation, sound science and new forms of shared water governance.

The 'ethic of transition' in Alberta suggests that existing norms, such as rural determination, form the basis for seeing how a long term vision of sustainability can be grounded in local praxis. Likewise, the creation of new forms of governance create a certain 'policy window' for enjoining public values through examinations of ideas of water's abundance, existing practices or the possibilities that new technologies can help shape new conceptual models. The relatively distinct levels of governance, however, present a barrier to effectively linking cross-scale governance initiatives, at least part of which may be attributed to the lack of regulatory authority outside of government. Another part, however, is the institutional variability that emerges out of the uneven institutional landscape in which *Water for Life* was adopted. At no point in public consultations, draft reports, the final strategy, or the renewal of *Water for Life* was there an appreciation of the existing 'shadow networks' that the implementation of the strategy ultimately relied on, and which was developed through the work of civil society. This suggests the possibility for the aims and ends of existing groups to be undermined through new forms of governance that create dependence on the government at the expense of civil society. As is also noted above, the *types* of partnership relationships

created in newly formed governance bodies can also have exclusionary elements, such as for First Nations.

What is to be made of Alberta's new water ethic on either existing networks or First Nations? One consideration is that, in effect, the policy narrative of *Water for Life* is delimited to only that of state jurisdiction, initially at the federal level and then the provincial. This casting of Alberta's policy narrative, which is used in this paper also as a way to situate what the 'ethic of transition' accomplishes, presents a point of contest. Even without entering into the broader arena of 'the political', it is evident that the politics of multi-level governance organizations are directly constrained by the narrative of transition created under provincial discourse and the shift towards multi-level governance. This is the case, for instance, where existing networks in civil society must be reworked to conform to the constraints of the new model of partnerships (i.e. contracts). This gives rise to a second consideration. It appears that the informal, advisory nature of Alberta's multi-level governance structure presents as a barrier to the introduction of new kinds of knowledge, such as Traditional Ecological Knowledge. Further, it reduces to some degree the capacity of civil society to function as a counterpoint to government. As one disgruntled participant put it: "we are victims of inclusion" (personal interview 12).

5.5 Conclusion

The 'possibility of a new water ethic' envisioned by the Alberta Water Council should be understood as the possibility to reconsider the internal water ethic of the state narrative rather than as a set of principles that will enable governance partnerships to effect changes to water regulation. From the perspective of transition management and an object-given approach to water ethics, Alberta's multi-level governance structure begins with a relatively strong orientation to systems-thinking and to visioning a future in which multiple levels of partnerships seek improved water management practices through cross-scalar partnerships. That vision did not persist into the actual model of governance that was created. Explaining that difference requires further explanation of 'the political' and a more careful explication of how to preserve both the antagonistic and agonistic elements of democratic governance institutions. At the level of politics, however, Alberta's new water ethic and its focus on conservation, sound science and partnerships reveal where sites of uncertainty and contest arise in the process of *internalizing* one policy narrative over, and at the expense of, those of civil society and First Nations.

Returning to some of the considerations with which this paper began. There remains a need to more fully understand the relationship between 'the political' and 'politics' in transition management. In the water management sector, investigations should give explicit attention to the existing ethical norms that characterize policy narratives and which work to create the conditions of exclusion, and the procedures of inclusion, that constrain transitions to sustainability. The object-given approach defended here presents one way to do so because it does not collapse *existing* water ethics into accounts that work out of only one narrative. Rather, it presents a way to identify where

and how new forms of governance, such as the co-optation of 'shadow networks,' or the exclusion of alternate narratives, such as First Nations, rework sites of legitimate dissent and collaboration in confronting and cultivating water norms. In this sense, the 'ethic of transition' requires further development so that 'policy windows' are not constrained through singular narratives that deny the multiplicity of narratives that co-evolve alongside, and in opposition to, existing socio-technical norms.

References

Alberta Environment (2003a). *Water for Life: Alberta's strategy for sustainability.* Edmonton: Pub No. I/955.

Alberta Environment (2003b). *Water for life: draft for discussion: Alberta's strategy for sustainability: highlights.* Edmonton: Pub No. I/936.

Alberta Environment (2005). *South Saskatchewan River Basin water allocation (revised).* Edmonton: Alberta Environment, regional services, southern region.

[AIPA] Alberta Irrigation Projects Association (2002). *South Saskatchewan River Basin: Irrigation in the 21st century.* Summary Report, Lethbridge, AB.

Alberta Water Council (2005). *Enabling partnerships: a framework in support of Water for Life: Alberta's strategy for sustainability.* Edmonton, Pub No. I/1005: Alberta Environment.

Alberta Water Council (2007). *Review of implementation progress of Water for Life, 2005-2006.* Edmonton: Alberta Water Council.

Alberta Water Council (2008a). *Water for life: a renewal.* Edmonton: Alberta Water Council, ISBN 978-0-7785-7670-9.

Alberta Water Council (2008b). *Strengthening partnerships: a shared governance framework for Water for Life collaborative partnerships.* Edmonton: Alberta Water Council.

Armstrong, C., Evenden, M., & Nelles, H. (2009). *The river returns: an environmental history of the Bow.* Montreal & Kingston: McGill-Queen's University Press.

Bakker, K. (2010). *Privatizing water: governance failure and the world's urban water crisis.* Ithaca: Cornell University Press.

Barbaza, R. (2012). Letting it flow: towards a phenomenology of water in the age of modern technology. *Kritika Kultura*, *18*, 57-67.

Bartlett, R. H. (1986). *Aboriginal water rights in Canada: a study of aboriginal title to water and Indian water rights.* Calgary: The Canadian Institute of Resources Law.

Berque, A. (2005). A basis for environmental ethics. *Diogenes*, *52*, 3-11.

Blatter, J., & Ingram, H. (Eds.). (2001). *Reflections on water: new approaches to transboundary conflict and cooperation.* Cambridge: Massachusetts Institute of Technology.

Boelens, R., Getches, D., & Guerva-Gill, A. (Eds.). (2010). *Out of the mainstream: water rights, politics and identity.* London: Earthscan.

Briscoe, J. (2010). Practice and teaching of American water management in a changing world. *Journal of Water Resources Planning and Management, July/August*, 409-411.

Brown, P. G., & Schmidt, J. J. (2010). An ethic of compassionate retreat. In P. G. Brown & J. J. Schmidt (Eds.), *Water ethics: foundational readings for students and professionals* (pp. 265-286). Washington DC: Island Press.

Brugnach, M., Dewulf, A., Henriksen, H. J., & van der Keur, P. (2011). More is not always better: coping with ambiguity in natural resources management. *Journal of Environmental Management*, *92*, 78-84.

Brugnach, M., & Ingram, H. (forthcoming). Ambiguity: the challenge of knowing and deciding together. *Environmental Science and Policy.*

Budds, J. (2010). Water rights, mining and indigenous groups in Chile's Atacama. In R. Boelens, D. Getches, & A. Guerva-Gill (Eds.), *Out of the mainstream: water rights, politics and identity* (pp. 197-212). London: Earthscan.

Butler, L. (1986). Defining a water ethic through comprehensive reform: a suggested framework for analysis. *University of Illinois Law Review*, *439*, 439-480.

Butler, L. (2000). The pathology of property norms: living with nature's boundaries. *Southern California Law Review*, *73*, 927-1016.

Chen, Z., Grasby, K., Osadetz, K., & Fesko, P. (2006). Historical climate and stream flow trends and future demand analysis in the Calgary region, Canada. *Water Science & Technology*, *53*, 1-11.

Cohen, A. (2011). *From water to watershed: an analysis of rescaled water governance in Canada.* Unpublished PhD Dissertation, University of British Columbia, Vancouver.

Conca, K. (2006). *Governing water: contentious transnational politics and global institution building.* Cambridge: MIT Press.

Delli Priscoli, J. (2000). Water and civilization: using history to reframe water policy debates and to build a new ecological realism. *Water Policy*, *1*, 623-636.

Du Pisani, J. (2006). Sustainable development - historical roots of the concept. *Environmental Sciences*, *3*(2), 83-96.

Espelund, W. N. (1998). *The struggle for water: politics, rationality, and identity in the American Southwest.* Chicago: University of Chicago Press.

Feldman, D. (1995). *Water resources management: in search of an environmental ethic.* Baltimore: John Hopkins University Press.

Feldman, D. (2007). *Water policy for sustainable development.* Baltimore: John Hopkins University Press.

Folke, C. (2003). Freshwater for resilience: a shift in thinking. *Philosophical Transactions of the Royal Society of London B*, *358*, 2027-2036.

Glenn, J. (1999). *Once upon an Oldman: special interest politics and the Oldman River Dam.* Vancouver: UBC Press.

Groenfeldt, D., & Schmidt, J. J. (forthcoming). Ethics and water governance. *Ecology and Society*,.

Gunderson, L., & Holling, C. S. (Eds.). (2002). *Panarchy: Understanding transformations in human and natural systems.* Washington, DC: Island Press.

Hendricks, C. (2009). Policy design without democracy? Making democratic sense of transition management. *Policy Sciences*, *42*, 341-368.

Holling, C.S. & Meffe, G.K. (1996). Command and control and the pathology of natural resource management. *Conservation Biology, 10,* 328-337.

Ioris, A. (forthcoming). The positioned construction of water values: pluralism, positionality and praxis. *Environmental Values*.

Kay, J. (2000). Ecosystems as self-organizing holarchic open systems: narratives and the second law of thermodynamics. In S. Jørgensen & F. Müller (Eds.), *Handbook of ecosystem theories and management* (pp. 135-160). Boca Raton, FL: Lewis Publishers.

Kelly, E., Schindler, D., Hodson, P., Short, J., Radmanovich, R., & Nielsen, C. (2010). Oil sands development contributes elements toxic at low concentrations to the Athabasca River and its tributaries. *Proceedings of the National Academy of Sciences*, *107*(37), 16178-16183.

Kelly, E., Short, J., Schindler, D., Hodson, P., Mingsheng, M., Kwan, A. et al. (2009). Oil sands development contributes polycyclic aromatic compounds to the Athabasca River and its tributaries. *Proceedings of the National Academy of Sciences*, *106*, 22346-22351.

Kemp, R., Loorbach, D., & Rotmans, J. (2007). Transition management as a model for managing processes of co-evolution towards sustainable development. *International Journal of Sustainable Development & World Ecology*, *14*, 78-91.

Ko, J., & Donahue, W. (2011). *Drilling down: groundwater risks imposed by in situ oil sands development.* Canmore: Water Matters Society of Alberta.

Krippendorff, K. (2004). *Content analysis: an introduction to its methodology* (2nd ed.). London: Sage Publications.

Laird, K., Cumming, B., Wunsam, S., Rusak, J., Oglesby, R., Fritz, S. et al. (2003). Lake sediments record large-scale shifts in moisture regimes across the northern prairies of North America during the past two milennia. *Proceedings of the National Academy of Sciences*, *100*(5), 2483-2488.

Lemos, M. (2008). Whose water is it anyway? Water management, knowledge, and equity in northeast Brazil. In J. M. Whiteley, H. Ingram, & R. W. Perry (Eds.), *Water, place, & equity* (pp. 249-270). Cambridge: The MIT Press.

Loorbach, D. (2010). Transition management for sustainable development: a prescriptive, complexity-based governance framework. *Governance*, *23*(1), 161-183.

Lumley, S., & Armstrong, P. (2004). Some of the nineteenth century origins of the sustainability concept. *Environment, Development and Sustainability*, *6*, 367-378.

Marchildon, G. (2009). The Prairie Farm Rehabilitation Administration: climate crisis and federal-provincial relations during the great depression. *The Canadian Historical Review*, *90*(2), 275-301.

Matsui, K. (2009). *Native peoples and water rights: irrigation, dams, and the law in Western Canada.* Montreal: McGill-Queens University Press.

McMillan, B. (2001). *Alberta's water strategy: a summary of ideas.* Edmonton: Equus Consulting Group.

McMillan, B. (2002a). *Water for life: summary of consultation results.* Edmonton: Equus Consulting Group.

McMillan, B. (2002b). *Water for life: minister's forum on water: summary report of advice received.* Edmonton: Equus Consulting Group.

McMillan, B. (2003). *Water for life: summary of results: verification of directions described in the draft Water for Life strategy.* Edmonton: Equus Consulting Group, ISBN No. 0-7785-3001-9.

Meadowcroft, J. (2007). Who is in charge here? Governance for sustainable development in a complex world. *Journal of Environmental Policy & Planning*, *9*, 299-314.

Meadowcroft, J. (2011). Engaging with the politics of sustainability transitions. *Environmental Innovation and Societal Transitions*, *1*, 70-75.

Mitchell, B. (2002). *Resource and environmental management* (2nd ed.). Essex: Pearson Education Limited.

Mouffe, C. (2000). *The democratic paradox.* New York: Verso.

Mouffe, C. (2005). *On the political.* New York: Routledge.

Norgaard, R. (1988). Sustainable development: a co-evolutionary view. *Futures*, *20*(6), 606-620.

O'Riordan, T. (1976). *Environmentalism.* London: Pion.

Olsson, P., Gunderson, L., Carpenter, S., Ryan, P., Lebel, L., Folke, C. et al. (2006). Shooting the rapids: navigating transitions to adaptive governance of social-ecological systems. *Ecology and Society*, *11*(1), 18.

Pahl-Wostl, C. (2007). Transitions towards adaptive management of water facing climate and global change. *Water Resources Management*, *21*, 49-62.

Parfit, D. (2011). *On what matters: volume I.* New York: Oxford University Press.

Pentney, A., & Ohrn, D. (2008). Navigating from history into the future: the water management plan for the South Saskatchewan River Basin in Alberta. *Canadian Water Resources Journal*, *33*(4), 381-396.

Percy, D. (1977). Water rights in Alberta. *Alberta Law Review*, *15*, 142-165.

Percy, D. (1986). Water rights law and water shortages in Western canada. *Canadian Water Resources Journal*, *11*(2), 14-22.

Percy, D. (1996). Seventy-five years of Alberta water law: maturity, demise & rebirth. *Alberta Law Review*, *35*, 221-241.

Phare, M. S. (2009). *Denying the source: the crisis of First Nations water rights.* Surrey: Rocky Mountain Books.

Postel, S. (2008). The missing piece: a water ethic. *May*. Retrieved from http://www.prospect.org/cs/articles?article=the_missing_piece_a_water_ethic

Rodriguez, S. (2007). *Acequia: water sharing, sanctity, and place.* Sante Fe: School for Advanced Research Press.

Rooney, R., Bayley, S., & Schindler, D. (2012). Oil sands mining and reclamation cause massive loss of peatland and stored carbon. *Proceedings of the National Academy of Sciences*, *doi:10.1073/pnas.1117693108*, 1-10.

Rotmans, J., & Loorbach, D. (2009). Complexity and transition management. *Journal of Industrial Ecology*, *13*(2), 184-196.

Rydin, Y. (2005). Geographical knowledge and policy: the positive contribution of discourse studies. *Area, 37(1)*, 73-78.

Sauchyn, D., Stroich, J., & Beriault, A. (2003). A paleoclimatic context for the drought of 1999-2001 in the northern Great Plains of North America. *The Geographic Journal*, *169*(2), 158-167.

Schindler, D., & Donahue, W. (2006). An impending water crisis in Canada's western prairie provinces. *Proceedings of the National Academy of Sciences*, *103*(19), 7210-7216.

Schmidt, J. J., & Shrubsole, D. (forthcoming). Modern water ethics: implications for shared governance. *Environmental Values*.

Senecal, C., & Madramootoo, C. (2005). Watershed management: review of Canadian diversity. *Water Policy*, *7*, 509-522.

Shepherd, A., Gill, K., & Rood, S. (2010). Climage change and future flows of Rocky Mountain rivers: converging forecasts from empirical trend projection and down-scaled global circulation modelling. *Hydrological Sciences*, *24*(26), 3864-3877.

Smith, A., & Stirling, A. (2010). The politics of social-ecological resilience and sustainable socio-technical transitions. *Ecology and Society*, *15*(1), 11.

Tully, J. (2008). *Public philosophy in a new key* (volumes 1&2). Cambridge: Cambridge University Press.

van der Brugge, R., & van Raak, R. (2007). Facing the adaptive management challenge: insights from transition management. *Ecology and Society*, *12*(2), 33.

Voß, J.-P., & Bornemann, B. (2011). The politics of reflexive governance: challenges for designing adaptive management and transition management. *Ecology and Society*, *16*(2), 9.

Walker, G., & Shove, E. (2007). Ambivalence, sustainability and the governance of socio-technical systems. *Journal of Environmental Policy & Planning*, *9*(3-4), 213-225.

West, C. A. (2007). For body, soul, or wealth: The distinction, evolution, and policy implications of a water ethic. *Stanford Environmental Law Journal*, *26*, 201-232.

Whiteley, J. M., Ingram, H., & Perry, R. W. (Eds.). (2008). *Water, place & equity.* Cambridge, Mass.: The MIT Press.

Wolf, A. T. (2008). Healing the Enlightenment rift: rationality, spirituality and shared waters. *Journal of International Affairs*, *61*(2), 51-73.

⑥
CHAPTER SIX: CONCLUSION

6.1 Introduction

This dissertation has examined issues of water and ethics. After reviewing the literature on water ethics, it advanced three arguments regarding how to situate and describe claims regarding the 'possibility of a new water ethic' under Alberta's *Water for Life* strategy. Together, these arguments developed a framework for analyzing the water ethics of state jurisdictions. This concluding chapter does not repeat the conclusions of earlier chapters, but instead highlights the implications of this framework and assesses its limitations in supporting the broader argument of this thesis: that not only are water ethics coeval with the water norms of particular places, they are also part of making up the space of the world.

6.2 Implications

The dissertation began by situating water, ethics and modernity against the idea of 'world-making' and identified how narratives (or other stopping rules) allow contingent classification systems to explain events. It then reviewed the literature on water ethics and suggested that two predominant explanations of normative claims—environmental philosophy and law—can be improved upon by closer attention to the actual historical claims of key figures in early American water leadership. These figures articulated new categories for water, such as its classification as a resource, in ways that have implications for how past water norms affect shifts towards shared governance. As such,

this dissertation first showed how examining water ethics could contribute to the literature on modernity and trends towards shared water governance.

The first argument of Chapter 3 suggested that the narrative from which contemporary governance programs proceed did not emerge from nowhere, and that it is linked to the territory of the state. Once seen in this light, a key finding of this study is that how we approach the idea of "territory" has significant implications for how we understand the ways that water is classified with respect to spatial claims to, and power over, land. In this sense, the territory of the modern, liberal state inscribes normative values into the classification systems deployed for legitimizing the *kind* of political and social space it claims to be: that is, sovereign and self-constituting. The framework juxtaposed ideas of territory in Alberta with countervailing conceptions of First Nations regarding the classification of "land" to show how state water ethics exclude competing notions of, and sources for, sovereignty.

The second argument suggested that the entanglement of water within the modern ethos was not politically or ethically neutral. It sought to show how the propositions of water abundance, water scarcity and water security were influenced by the liberal ethos of modernity and the classification of water as a resource that emerged from the United States. It offered an account of how the search for non-metaphysical foundations for governing water *resources* ordered water without reference to unique relations to things, each other or the self. In place of these unique claims the trend in water governance has been to see claims to water in public terms. The replacement of the lifeworld of

individuals with the version of 'the public' allowed for under political liberalism was not, then, a 'de-centering' of water norms from an inherently meaningful cosmos. Rather, it was a 're-centering' of water norms without reference to the types of claims that would explain dimensions of social, subjective or symbolic interactions that did not reduce to the version of 'the public' claimed by political liberalism. In this regard, the dissertation concurs with Espelund's (1998) finding that competing water claims can appear 'incommensurable' if, in order to conform to one version of what rational participation in water governance is, they must contradict competing ideas of political agency. The thesis stopped short of offering alternate modes of political participation (i.e. Tully, 2008). The Alberta case revealed how the changing background assumptions regarding the relation of the state to the subject, the social and the symbolic opened up particular *kinds* of social space for governing water through participatory processes and water markets. The water markets in Alberta have not (yet) been particularly active and the study turned to a closer inspection of participatory governance for how new spaces of possibility, such as those suggested by claims regarding the province's new water ethic.

The third argument suggested that the possibility of a new 'water ethic' in Alberta is shaped by the manner in which it transitions from the *existing* water norms that inflect the historical dynamics of place, such as existing water allocation regulations and the response of civil society to previous management regimes, to a modern policy narrative. It suggested that the transition from 'government to governance' has been mixed, because the types of "possibility" foreseen for Alberta's new water ethic are premised on the exclusion of alternate narratives, territories, or rules for participation of those who remain

outside of, or seek to confront, the state. Evidence for this exists, for instance, in the data presented regarding the changing role of civil society in water governance in Alberta and the procedural dependencies created in the shift to shared governance. In this case, the modality of Alberta's new water ethic was described as an 'ethic of transition' that sought to reorder governance institutions without substantive alterations to existing power structures or regulatory authority. This may be seen as the expression of governance *within* a modern narrative that does not seek out, nor allow for, authoritative claims outside of the state itself.

Taken together, and as Table 6.1 organizes, the arguments in this dissertation suggest that not only are water ethics coeval with the water norms of particular places, they are also part of making up the space of the world. This new space is tied to the classification of the space of the state (its territory) and to how the reclassification of water in relation to the state is negotiated alongside the elimination of unique claims that may appeal to authority resting outside of the state itself. The three elements of this shift bear on key themes of modernity regarding the nature of public space (i.e. state territory), the propositions claimed adequate to establish and reflexively maintain a public water narrative (i.e. water abundance, scarcity and security), and the establishment of rules for public participation in shared water governance. Each of these elements is evident in the Alberta case, where the water ethics of the state have progressed within the broader ethos of modernity to re-center water norms within an alternate space of the world.

Table 6.1. Water ethics framework.

Water Ethics Framework			
Relations to	*Pre-modern lifeworld*	Reclassification of water as a resource	*Modern replacement*
The self	The subject		Public Space
Each other	The social		Public Propositions
Things	Symbolic interactions		Public Procedures

The water ethics framework in Table 6.1 can also be shown in terms of how, for instance, the modern water narrative of water abundance, water scarcity and water security can be seen alongside the negation of, and without reference to, the pre-modern lifeworld (Figure 6.1)

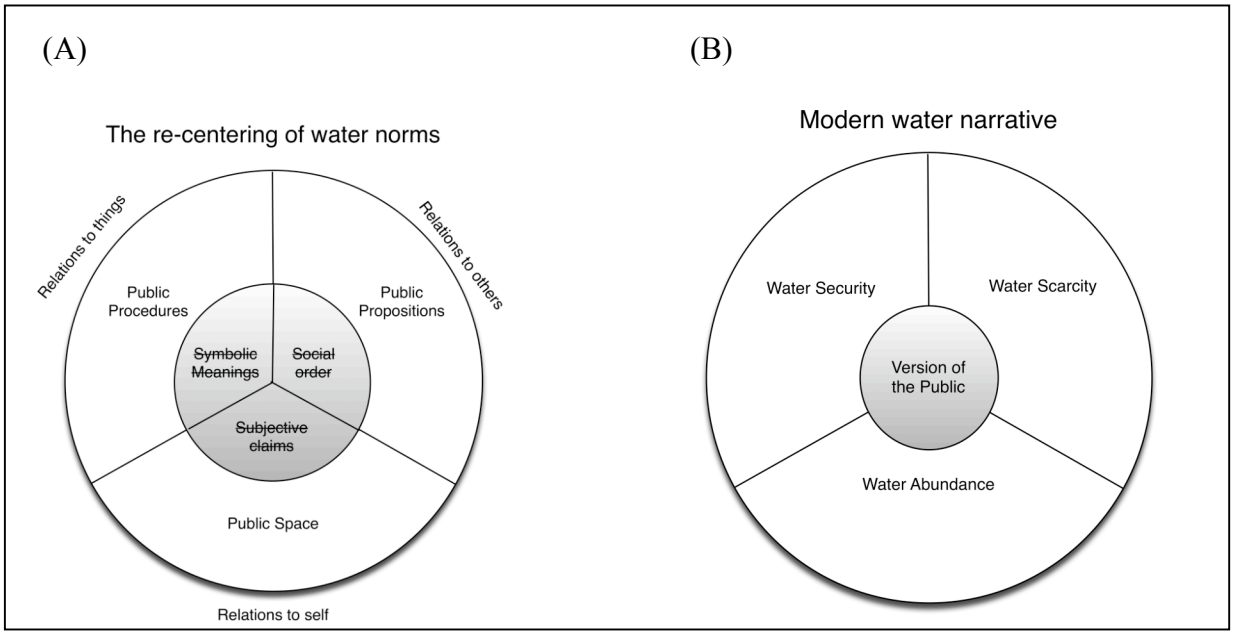

Figure 6.1. (A) The de-centering claims of modernity negate the unique claims of the lifeworld regarding subjective claims, symbolic meanings and social order and replace them with claims regarding public space, public propositions and public procedures. (B) For example, as Chapter 4 argued, public propositions provide for a modern narrative without reference to the lifeworld and in reference to a liberal version of the public.

III. Concluding assessment and areas of future research

The water ethics framework developed in this dissertation has limits and potential. In terms of limits, it is constrained by the fact that it works out of Eurocentric accounts of modernity (see Kanth, 2005). This limitation is mitigated to some degree by the effort to show how Eurocentric claims, such as the very idea of 'territory', can be situated against other ways of making up the world. Nevertheless, the framework does not escape this orientation. The framework is likewise constrained by seeking to allow for narratives of complex systems ecology to explain the co-evolution of water norms. In this sense, the framework is not geared towards the preservation of lifeworlds that have been interrupted or threatened by state water ethics. One response to this limitation that remains to be explored is the extent to which, for instance, indigenous lifeworld orientations are compatible with accounts of complex systems ecology (see also Berkes, 1999). Another limitation is that the framework may be too closely tied to the Alberta case, and is certainly illustrative of a primarily North American experience. As argued herein, the U.S. water experience has come to dominate global governance discourse, so the framework remains useful to the extent that engaging in the water ethics literature allows for engagements with governance contexts that are inflected by that experience, such as those relying on propositions of water abundance, water scarcity or water security or which treat water as a 'resource'. Whether or not the framework developed can help to show how place-specific water norms elsewhere will require comparative work.

In terms of potential, an important dimension of the framework developed is that the 'space of the world' is understood in terms that allow for both physical and social

space to be treated in relation to the way we order events. This is a critical initial move in maintaining appreciation of water's refusal to be classified as only physical or wholly social. It is also a novel contribution to understanding how ideas of 'world-making' fit with geography. The water ethics framework offered alongside this orientation to world-making advances an explanatory rubric for explicating how liberal influences within modernity affect water norms. The framework is not all-encompassing, but it stands as one of the first efforts of its kind. Finally, the four substantive chapters of this thesis work to explain the proposed water ethics framework and to contribute to, respectively, the water ethics literature, territory, water governance propositions, and transition management. In this sense, the water ethics framework has individual elements that can be parsed out and developed for how ideas of world-making may fit with local and place-specific challenges to modern entanglements with public space, public propositions and public procedures in water policy. The aim, however, of *describing* the water ethics of state jurisdictions presents a challenge for future research: Namely, because the current trajectory of water use is recognized as unsustainable in terms of the total effects of humans on Earth's water systems (Vörösmarty et al., 2010; Rockström et al., 2009), there is an urgent need for a counter narrative to ground new, sustainable water norms. To conclude, this dissertation was entitled "Ethical enigmas in modern water policy: the Albertan example" in order to direct attention to the fact that norms are often poorly understood, and frequently under-researched, in assessments of water and modernity. There are a growing number of exceptions on this front, and this dissertation has sought to contribute to them through a focus on describing how the 'possibility of a new water ethic' came about in Alberta and as part of how the space of the world is made up.

References

Berkes, F. (1999). *Sacred ecology: traditional ecological knowledge and resource management*. Philadelphia: Taylor and Francis.

Espelund, W. (1998). *The struggle for water: politics, rationality, and identity in the American Southwest.* Chicago: University of Chicago Press.

Kanth, R. (2005). *Against Eurocentrism.* New York: Palgrave Macmillan.

Rockström, J., Steffen, W., Noone, K., Persson, A., Chapin, S., Lambin, E. et al. (2009). A safe operating space for humanity. *Nature*, *461*, 472-475.

Tully, J. (2008). *Public philosophy in a new key* (volumes 1&2). Cambridge: Cambridge University Press.

Vörösmarty, C. J., McIntyre, P. B., Gessner, M. O., Dudgeon, D., Prusevich, A., Green, P. et al. (2010). Global threats to human water security and river biodiversity. *Nature*, *467*, 555-561.

Appendix I: Interview Themes

The following themes provided the entry points for semi-structured interviews. Each interviewee received advance notice of these themes (verbatim) in the invitation letters sent during the recruitment process:

1) *Decision-making:* This part of the interview will be interested in issues of fairness in the procedures used to arrive at decisions, particularly with respect to how different perspectives are balanced, and how final decisions are reached.

2) *Claims about water:* This aspect of the interview will ask you to compare how scientific facts, existing social arrangements (i.e. laws) or personal experiences are considered in decision-making and whether certain types of knowledge are more important than others.

3) *Water management:* This portion of the interview focuses on the water management principles outlined in the *Water for Life* strategy and the relevance of those principles to the specific issues faced in decision making.

4) *Alberta's water ethic:* This topic looks at Alberta's *Water for Life* strategy; its suitability for achieving fairness in water conservation and how it fits more generally with the values of water users in Alberta.

5) *Evaluation:* Here the interview will shift towards the implementation of the *Water for Life* strategy, especially in terms of how existing water uses are judged to be desirable or not based on such things as their longevity, or the potential for future innovation.

6) *Adaptation:* The last part of the interview is interested in the values that you see as critical for meeting the uncertainties that climate variability presents in the near or long term.

Appendix II: Ethics Approval

The following text documents the completion of Study # 16362S

OFFICE OF RESEARCH ETHICS

Please print and send in the completed signed form to the Office of Research Ethics by: Feb 15, 2012
(PLEASE note that faxed and electronic copies will not be accepted)
Failure to complete and return this form in a timely manner may result in withdrawal of ethics approval.

Principal Investigator: Dr. Dan Shrubsole, Geography - University of Western Ontario

UWO Ethics Study #: 16362S
Study Title: Ethical enigmas in modern water policy: the Albertan example

Approval End Date: December 31, 2011 <-- CHECK THIS DATE CAREFULLY

Section A

STUDY STATUS - Indicate the current status of the study (with an "x")
__X___ **Completed** (If study is complete, fill out the End of Study Summary Report (Form 2-F-009))
_____ **Continuing** (Complete the balance of the form - Section B and C.)
_____ **Start Still Pending** (On an attached sheet indicate why the study has not started.)
_____ **Study Not to be Started** (On an attached sheet indicate why the study is not to be started. N.B. The ethics approval for the study will be withdrawn. If you want to proceed with the study in the future you must reapply for ethics approval.)

Section B

The following questions are to be completed only for studies that have started. Please respond to YOUR SITE ONLY.
1. How many potential subjects/charts were approached to participate/be reviewed? ____46_____
2. How many participants/charts consented to participate/were reviewed? _____25_____
3. How many participants/charts actively withdrew from your study/were withdrawn? Please describe the circumstances leading to withdrawal on a separate page._____0_____
4. How many participants/charts remain to be enrolled/reviewed at your site? _____0_____
5. What is the date or version of the Letter of Information for your site?____Original_____

Section C
On an attached sheet please provide the following information:

1. **A brief synopsis of progress to date with an emphasis on any problems encountered during the conduct of the research.**
2. **If you need to EXTEND the approval end date for your study please indicate what the new end date should be and provide an explanation/rationale for why the extension is necessary**

_____ _____
Signature of Principal Investigator (Local) **Date**

Section C.

The study is now complete. No significant problems were encountered save scheduling and the fact that the study examined watershed planning groups in Alberta that were only recently formed. This meant requesting an extension to the original ethics approval in order for participants to feel comfortable in their participation in the study.

CURRICULUM VITAE

JEREMY J. SCHMIDT

POSITION

Trudeau Scholar and PhD Candidate, Geography, University of Western Ontario

CONTACT

SUMMARY

My research and teaching focus on: (1) water and ethics, (2) the politics and territories of human-environment relationships, (3) the philosophy of environmental policy & management, and (4) normative problems in complex systems.

EDUCATION

PhD Geography University of Western Ontario (UWO), London, Ontario — 2012 (June)
Dissertation: *Ethical enigmas in modern water policy: the Albertan example*
Advisor: Dan Shrubsole, Professor & Departmental Chair
Reader: Joy Parr, Professor & Canada Research Chair (*Technology, Culture & Risk*)
Reader: Tony Weis, Associate Professor

M.A. Geography McGill University, Montreal, Quebec — 2007
Thesis: *The past, present and future of water policy in the SSRB, Alberta, Canada*
Supervisor: Peter G. Brown, Professor
External Examiner: Karen Bakker, Canada Research Chair (*Political Ecology*), UBC

B.A. (Great Distinction) University of Lethbridge, Lethbridge, Alberta — 2005
Double major: Philosophy and Geography (Independent studies: Kant's early reception in Britain, abductive logic, environmental ethics, Antarctic glaciology)

B.A. Ministry & Wilderness Leadership; Prairie Bible College, Three Hills, AB — 2002

RECENT AWARDS

Killam Trusts: Killam Post-doctoral Fellowship ($92 000) — 2012-14
SSHRC: Post-doctoral Fellowship ($81 000) — 2012-14
Pierre Elliott Trudeau Foundation: Doctoral Scholarship ($180 000) — 2009-12
Prairie Adaptation Research Collaborative: Graduate Scholarship ($5000) — 2008
Winner: Graduate Essay, *Environmental Studies Association of Canada* ($600) — 2008
Top Student, Department of Geography, UWO (honor) — 2008
SSHRC: Doctoral Fellowship ($80 000) — 2007-11
UWO: Western Graduate Research Scholarship ($32 000) — 2007-11
SSHRC: CGS Masters Scholarship ($17 500) — 2005
McGill University: Recruitment Excellence Fellowship ($5000) — 2005

RESEARCH

Principle Investigator *Alternative water futures in Alberta* — 2011
Parkland Institute, Faculty of Arts, University of Alberta

C**o-investigator** with Dr. Peter G. Brown**.** *Water and ethics* — 2007-09
Faculty of Agriculture and Environmental Sciences, McGill University

TEACHING

Lecturer Department of Geography & Environment, Mt. Allison University — 2010-11
GENV 4991b: *Geographies of water: management, planning metrics & mores* (Fall '10)
GENV 4991c: *Ethics in geography, planning & environment* (Winter '11)

Lecturer Department of Geography, University of Western Ontario — 2009
GEOG 4000b: *The nature and philosophy of geography* (Winter '09)

Topics Lecturer (Graduate) McGill-UNEP Centre for Environmental Assessment/Graduate program in Integrated Water Resources Management 2007-11
Areas: The conceptual and ethical basis of sustainable development/water ethics

SCHOLARSHIP

Books

2010. Brown, Peter G. and Jeremy J. Schmidt (eds). *Water Ethics: Foundational Readings for Students and Professionals*, Washington: Island Press. (co-author of 5 editorial essays)

Refereed Research Publications

[Accepted and forthcoming] Schmidt, Jeremy J. and Dan Shrubsole. Modern water ethics: implications for shared governance. *Environmental Values.*

In press. Groenfeldt, David and Jeremy J. Schmidt. Ethics and water governance. *Ecology and Society.*

In press. Schmidt, Jeremy J. Integrating water management in the Anthropocene. *Society and Natural Resources.*

2011. Schmidt, Jeremy J. Alternative water futures in Alberta. *Parkland Institute* (Edmonton: University of Alberta, ISBN: 978-1-894949-32-3) 52pp.

2010. Schmidt, Jeremy J. and Martha Dowsley. Hunting with polar bears: problems with the passive properties of the commons. *Human Ecology* 38(3): 377-387.

2007. Schmidt, Jeremy J. Pricing water to death: Alberta's water permits prolong the problem. *Alternatives Journal* 33(4): 29-30.

Work in Progress (*Dissertation Chapter)

*Schmidt, Jeremy J. "Water's territory" To be submitted to *Political Geography*
*Schmidt, Jeremy J. "Ordering water" To be submitted to *Economy and Society*
*Schmidt, Jeremy J. "The ethic of transition" To be submitted to *Water Resources Management*
Schmidt, Jeremy J. "Social learning in the Anthropocene: what is it?" To be submitted to *Global Environmental Change*
Schmidt, Jeremy J. and Kyle Mitchell. "Property and the right to water: toward a non-liberal commons" Submitted to *Review of Radical Political Economics.*

Book Chapters (*Invited)

2013. *[Forthcoming]. Schmidt, Jeremy J. "Alberta's water: from community to capital," in *The Political Ecology and Governance of Alberta.* Adkin, L. Krogman, N. and Miller, B. (Eds). Toronto: University of Toronto Press.

2012. *[Forthcoming] Schmidt, Jeremy J. "Water as an ethical opportunity: rethinking 'failures' in Canadian water policy," in, *Water as a Social Opportunity*, J. Linton and S. Davidson (Eds). Montreal: McGill-Queen's University Press.

2012. Schmidt, Jeremy J. "Scarce or insecure? The right to water and the ethics of global water governance." In, *The right to water*: *politics, governance and social struggles*, F. Sultana and A. Loftus (Eds). London: Routledge. Pp. 94-109.

2010. Schmidt, Jeremy J. "Water ethics and water management," in *Water Ethics*, Brown P.G. and J.J. Schmidt (Eds). Washington DC: Island Press. Pp. 3-15.

2010. Brown, Peter G. and Jeremy J. Schmidt. "An ethic of compassionate retreat," in

Water Ethics, Brown P.G. and J.J. Schmidt (Eds). Washington: Island Press. Pp. 265-286.

Book Reviews (refereed journals)

Forthcoming. Schmidt, Jeremy J. Review: Moran, E. Environmental social science: human-environment interactions and sustainability. (Wiley Publishers, 2010). *International Journal of Social Research Methodology.*

Submitted. Schmidt, J. J. Review: Zetland, D. The end of abundance: economic solutions to water scarcity (Amsterdam: Aguanomics Press, 2011). *Journal of Peace Research.*

2012. Schmidt, Jeremy J. Review: Boelens, R., Getches, D. and A. G. Gil (Eds.), Out of the mainstream: water rights, politics and identity (London: Earthscan, 2010). *Agriculture and Human Values* 29(1): 127-128.

2011. Schmidt, Jeremy Review: D. Kysar, Regulating from nowhere: environmental law and the search for objectivity. (New Haven: Yale University Press, 2010). *Environmental Values* 20(4): 567-569.

2011. Schmidt, Jeremy J. Review: J. Linton, What is water? The history of a modern abstraction. (Vancouver: UBC Press, 2010). *The Canadian Geographer* 55(4): 513-514.

2011. Schmidt, Jeremy J. Review: D. Delaney, The spatial, the legal, and the pragmatics of world-making: nomospheric investigations. (New York: Routledge, 2010). *Annals of the Association of American Geographers*, 101(6): 1388-1390.

2011. Schmidt, Jeremy J. Review: Kenway, J. and Fahey, J. (Eds.), Globalizing the research imagination. (New York: Routledge, 2009). *International Journal of Social Research Methodology*, 14(4): 333-335.

2011. Schmidt, Jeremy J. "The de-symbolized world." *Capitalism, Nature, Socialism,* 22: 116-18.

2010. Schmidt, Jeremy J. Review: G. Chamberlain, Troubled waters: religion, ethics, and the global water crisis (New York: Rowman & Littlefield Publishers, Inc., 2008). *Journal for the Study of Religion, Nature and Culture*, 4: 112-13.

2009. Schmidt, Jeremy J. Review: U. Heise, Sense of place and sense of planet: the environmental imagination of the global. (New York: Oxford University Press, 2008). *Ethics, Place & Environment*, 12(1): 143-45.

2008. Schmidt, Jeremy J. Review: J. Benidickson, The culture of flushing: a social and legal history of sewage. (Vancouver: UBC Press, 2007). *Canadian Public Policy* 34: 135-36.

Other Publications (conference proceedings, theses & popular)

2011. Schmidt, Jeremy J. The ethic of transition: evidence from multi-level governance in Alberta. *Proceedings of the World Water Congress.* Recife, Brazil, 24-28 September.

2011. Schmidt, Jeremy J. Why is the census not an election issue? *The Mark News,* 11 April. URL: http://tinyurl.com/cyqkkmj

2011. Schmidt, Jeremy J. Ethical oil: a moral misnomer. *The Mark News*, 21 January. URL: http://www.themarknews.com/articles/3820-ethical-oil-a-moral-misnomer

2010. Schmidt, Jeremy J. The ethics of instream flows: science and policy in southern Alberta, Canada. *World Academy of Science, Engineering and Technology*, 70: 193-199.

2010. Brown, Peter G. and Jeremy J. Schmidt. An ethic of compassionate retreat. *Minding*

Nature: Journal for the Center of Humans and Nature 3(2): 16-27. (reprint)

2008. Dowsley, M. and Schmidt, Jeremy J. Hunting with polar bears: questioning assumptions of passive property. *Proceedings of the 12th Biennial Conference of the International Association for the Study of the Commons*, July 14-18, Cheltenham, England.

2007. Schmidt, Jeremy J. The past, present and future of water policy in the South Saskatchewan

River Basin, Alberta, Canada. Unpublished MA Thesis, McGill University.

Conference Papers, Presentations & Posters (*Invited)

2012. *Schmidt, Jeremy J. Panelist: *Information, private actors and environmental policy*. Trudeau Foundation Summer Institute, Montebello, QC, May 13-18.

Schmidt, Jeremy J. and Kyle Mitchell. *Property and the right to water: toward a non-liberal commons*. Paper: Association of American Geographers. New York, February 24-28.

Schmidt, Jeremy J. Panelist: *Transition theory, coupled human-natural systems, and geography: cross-connections and opportunities for analysis.* Association of American Geographers. New York, February 24-28.

Schmidt, Jeremy J. *A new space for conservatism.* Paper: Between tradition and innovation: a forum on a new kind of conservatism. Trudeau Foundation Scholars Workshop, Victoria, B.C., February 7.

*Schmidt, Jeremy J. *Grounding water policy: wastewater and Alberta's Water for Life strategy.* Presentation: 14th Annual Alberta Onsite Wastewater Management Association Convention. Edmonton, January 26-28.

2011. *Schmidt, Jeremy J. *Sovereignty and self-rule: scaling citizenship to complex systems.* Presentation:
Crossing Canada: A National Dialogue. Halifax, November 17.

*Schmidt, Jeremy J. *Water as an ethical opportunity: rethinking 'failures' in Canadian water policy*. Paper: Water as a social opportunity. Kingston, Ontario, Oct. 30-Nov. 1.

Schmidt, Jeremy J. *The ethic of transition: evidence from multi-level governance in Alberta.* Paper: XIV World Water Congress. Recife, Brazil, September 24-28.

Schmidt, Jeremy J. *Modern water ethics: from 'progress' to 'compassionate retreat'*. Paper: 8th Annual Meeting of the International Society for Environmental Ethics. Nijmegen, The Netherlands, June 14-17.

Schmidt, Jeremy J. *Reporting on the states of things, such as Alberta's watersheds.* Presentation: Canadian Association of Geographers. Calgary, AB. May 31-June 4.

*Schmidt, Jeremy J. *What is water?* Author-meets-critic panel w/Jamie Linton, Erik Swyngedouw and Farhana Sultana. Presentation: Association of American Geographers. Seattle, April 12-16.

2010 Schmidt, Jeremy J. *The ethics of instream flows: science and policy in southern Alberta, Canada.* Paper:
International Conference on Sustainable Water Resources Management. Paris, France. Oct 24-27.

Schmidt, Jeremy J. *Water's territory: Western water norms in southern Alberta from settlement to sustainability.* Paper: Under Western Skies, Calgary, AB. Oct. 13-16.

Schmidt, Jeremy J. *Creativity pace change: resilience as policy metaphor.* Paper: Ideas for change: creativity in managing socio-ecological systems. Trudeau Foundation Scholars Workshop, Saskatoon, SK, May 21.

Schmidt, Jeremy J. *Scarce or insecure? The changing ethics of global water governance.* Paper: The Right to Water. Syracuse, New York. March 29-30.

2009 Schmidt, Jeremy J. *What is water for? Assessing the state of water management education in Canada.* Presentation: WaterEDwest, September 10-13, 2009, Banff.

Schmidt, Jeremy J. *Towards a water ethic: Canadian agendas and provincial experience in Alberta.* Paper: 6th Canadian River Heritage Conference, June 14-17, Ottawa.

Schmidt, Jeremy J. *Is social learning good? The ethical paradox of adaptive management.* Paper: Canadian Association of Geographers, May 26-30, Ottawa.

Schmidt, Jeremy J. *Water's territory: political boundaries to settlement and sustainability in southern Alberta.* Paper: History in the Making 14. March 7, Concordia U. Montreal.

2008 Dowsley, M. and J.J. Schmidt *Hunting with polar bears: questioning assumptions of passive property.* 12th Biennial Conference of the International Association for the Study of the Commons, July 14-18, Cheltenham, England.

Schmidt, Jeremy J. *Water and ethics: why a new model for resource management is needed.* Paper: Interdisciplinary Environmental Assoc. June 30 – July 3, Edmonton, AB.

*Schmidt, Jeremy J. *What are water policies for?* Paper: Environmental Studies Association of Canada, June 3-6, Vancouver, British Columbia.

2007 Schmidt, Jeremy J. *Sustaining development through a cooperative economy.* Presentation: 4th Annual Citizen's Summit, June 1-3, Montreal.

Schmidt, Jeremy J. *Adaptive management, social learning and the future of water management in southern Alberta.* Presentation: Bridging the Sciences, Montreal, Mar. 29-30.

2006 Schmidt, Jeremy J. *Water for life or water for now? Getting to the source of water scarcity in southern Alberta.* Poster: Canadian Water Network, November 20-23, Montreal.

REFEREE

Journals: Environment and Planning D: Society and Space; Human Ecology; Journal of Agricultural and Environmental Ethics; Les Cahiers de Droit (Canada's leading French language law journal)

Policy: National Network on Environments and Women's Health (York University)

SERVICE

Advisory Board: Water Ethics Network 2011-
Board of Directors. Canadian Water Resources Association (CWRA) 2009-
National Chair. CWRA Student and Young Professionals 2009-
2009-11: Working Group. UNESCO: Water Ethics and Water Resource Management
2008-11: Working Group. Canadian National Water Strategy (CWRA)
2009-10: Graduate Affairs Committee, Geography, UWO
2006-07: Beatty Memorial Lecture Committee. McGill University
2006-07: Geography Graduate Society Executive. McGill University

ACADEMIC

Discussion Leader Water and sustainability. *World Policy Institute.* New York, 3 May 2012

EVENTS

Colloquium Seminar "Water and world-making: abundance, scarcity and security in global governance. Department of Geography, King's College London. 26 March 2012

Workshop Leader with Jared Giesbrecht (U Victoria) "Between tradition and innovation: a forum on a new kind of conservatism." *Trudeau Foundation Scholars Workshop*. Victoria, B.C. 7 February 2012. (attendees included James Tully, Jeremy Webber & Michael M'Gonigle)

Speaking Tour "Alternative water futures in Alberta." Cities: Calgary, Edmonton, Lethbridge, Medicine Hat, Red Deer. December 5-11, 2011

Session Moderator "Transition to Adaptive Water Management: Multi-level Governance of Transformation." World Water Congress, Recife, Brazil, September 24-29, 2011

Colloquium Seminar "Alberta's water ethic: territory, scarcity, security." Department of Geography, University of Western Ontario. 26 November 2010

Workshop Leader with Lily Yumagulova (UBC) and Nic Rivers (SFU). "Ideas for change: creativity in managing socio-ecological systems." *Trudeau Foundation Scholars Workshop*, Saskatoon, SK. 21 May 2010 (attendees included Bill Rees & John Robinson)

Guest Speaker (2009). "Dis-membered: A critical assessment of inclusion criteria in environmental debates." *Critical Reading Seminar,* Department of Geography, UWO

Invited Guest "Restoring Balance—The Great Mississippi River." *Religion, Science and the Environment Symposium*. New Orleans, 18-25 October 2009. The RSE symposia are convened bi-annually by the Ecumenical Patriarch, Bartholomew (www.rsesymposia.org)

ADDITIONAL RESEARCH, TEACHING, & EXPERIENCE

Course Co-designer (w/Peter G. Brown) NRSC 512: *Water: ethics, law and policy* 2007
Graduate program, Integrated Water Resources Management, McGill University

Research Assistant Principle Investigator: Peter G. Brown, McGill School of Environment**.** Project title: *Institutions for civilization.* SSHRC funded 2006

Teaching Assistant

UWO: GEOG 2144: Geography of Tourism, GEOG 2090: Space exploration, GEOG 2152: Geography of hazards, GEOG 2450: Intro. to resource and environmental management 2007-10

McGill: NRSC 512: Water: ethics, law and policy, NRSC 374: Principles of earth citizenship, GEOG 302: Environmental management, ENVR 203: Knowledge, ethics & environment, GEOG 270: Protected areas (x2) 2006-07

Wildland Firefighter Alberta Sustainable Resources Development, Provincial Helitack. Duties: Initial attack, sustained action and urban-interface strike team 2003-04

Facilitator and Technical Intern in Outdoor Education Explore program in wilderness leadership, Prairie Bible College. Areas: Whitewater kayaking, back-country skiing, orienteering 1999-02

OTHER AWARDS

Progressive Economics Forum, Essay competition (honorable mention)	2006
Government of Alberta: Jason Lang Scholarship ($1000)	2004
University of Lethbridge: Academic Scholarship ($1100)	2004
Government of Alberta: Jason Lang Scholarship ($1000)	2003
University of Lethbridge: Academic Scholarship ($1000)	2003
Canadian Association of Bible Colleges: Pi Alpha Mu Honors Society	2002

MEDIA

"Market-based water allocation system has drawbacks: report," *The Western Producer* 12 January 2012.
"Water scarcity a worry," *Lethbridge Herald,* 6 December 2011

"Report suggests expanding water market in Alberta hard to swallow," *Winnipeg Free Press*, 5 December 2011
"Turning water into money," *Macleans*, 7 July 2011 (www.macleans.ca)
"Spaces, Places and Faces," Carleton Radio (CKCU), 11 February 2010

MEMBERSHIPS

Association of American Geographers	2010-
Canadian Association of Geographers	2008-
Network in Canadian History and Environment (NICHE)	2008-
Canadian Water Resources Association	2007-
Progressive Economics Forum	2006-